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## Welcome

All too often the cars we treasure most in our lives have the awful habit of becoming huge money pits when they head off to the workshop for what in the first instance seemed like a reasonably straightforward repair. We all know how one job on a classic can quickly morph into another very expensive repair. Before you know it the final bill to put everything right has grown into an uncontrollable monster that's gobbled up a huge chunk of your already diminished post-Festive bank balance.

This is exactly what happened the other day when our project XJS went to a Staffordshire XJS specialist to have new wishbone rubbers and front swivels fitted. Although the job was progressing well, a 'phone call from one of the technicians informing me there was now a growing pool of brake fluid under our Jaguar was worrying to say the least. This urgent problem definitely needed sorting out sooner rather than later, so I gave the go-ahead to proceed and fill me in with the gory details later. Within a couple of hours, our Jaguar's rear suspension was neatly laid out on the workshop floor at Just XJS Ltd while proprietor Andy Harvey replaced the car's hard-to-access inboard discs and calipers.

How this time-consuming job was completed is covered in this month's Project XJS and I'd like to take this opportunity to thank Andy for throwing his busy work schedule up in the air to sort our car in double quick time. So if that was your XJS taking a back seat while Andy wrestled with our car's rear suspension cage, I sincerely apologise for the delay but at least we made the final print deadline for this issue.

Ford fans will be delighted see a mint MkII 3-litre Capri gracing several pages of this issue and more observant readers may notice this fine example belongs to the same chap who also owns the smart little Renault 4TL that appears a few pages further on. Another interesting classic featured in this issue is Chris Hart's MkIII Spitfire as the car appeared in CM a couple of years ago as a work in progress restoration. It may have taken many moons to conclude the Triumph's rebuild, but the finished result is truly outstanding, especially as large chunks of the Spitfire's body tub disappeared while it was being sand blasted.

*Iain wakefield*  
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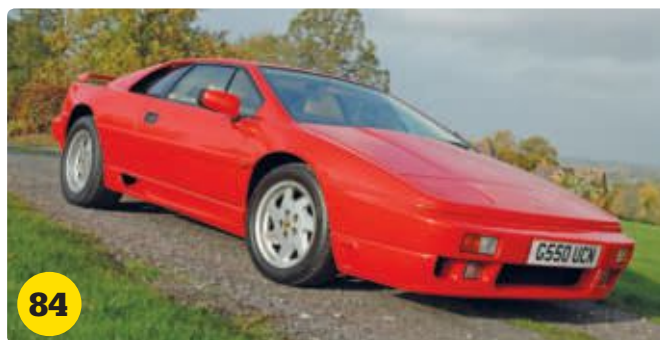
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## NUMBERS WANTED FOR CASH



## NEW WELSH TRACK

Ebbw Vale is set to receive its very own £325 million racetrack, set to bring £45m into the local economy of Blaenau Gwent and South Wales; 6000 jobs and three-quarters of a million visitors will be created at the new Circuit of Wales. The sign off on land derestriction was completed last month.

## Welcome

### I've only

**heard** a real V16 engine a couple of times over the years I've been involved with old cars,

but we came close this month when we used the Discovery for a photo shoot on an 'HMC' Healey – the Rover-engined update of the 3000 which was built to such a high standard that it gained the endorsement of none other than Geoffrey Healey himself.

As the two Rover engines burred through a Worcestershire housing estate, at least one resident popped his head out of the front door when he thought a BRM racer was being tested outside his house. He turned out to own an MGA so finding two blokes photographing a 'replica' Healey outside was a pleasure rather than an annoyance on an otherwise mundane winter weekday morning.

Of course it was only later that I realised the HMC cars are often valued more highly than the real thing but after driving it I can understand why: it's really very impressive and if you want to know more, pick up a copy of our sister magazine, *Classic Car Mart*.

Meanwhile, this issue neatly marks the end of the first full year since Kelsey has been publishing *Classics Monthly* and hopefully if you're reading this then you like our efforts this far. We've got some great ideas lined up for 2016 and in fact just as the rest of the world is winding down for the festive season, I'm about to take out a Jensen-Healey for a photo shoot. Is it the failure it's always made out to be or an unrecognised gem? Check back in the New Year and find out. And if you've restored one yourself then do let us know.

*Paul Wager*

Editor In Chief

Email [paul.wager@kelsey.co.uk](mailto:paul.wager@kelsey.co.uk)



## LONDON CLASSIC CAR SHOW 2016

**After its first year** proved overwhelmingly successful for dealers, the London Classic Car Show (LCCS) returns to the ExCeL Centre (from Thursday, February 18 to Sunday, February 21) bigger and better than ever before, with a 34,000 square foot floor plan. "We are expanding the London Classic Car Show because that's what everybody wants," said event director Bas Bungish. "Feedback from visitors and exhibitors at the first show told us that they loved the innovation, the quality of the displays and the atmosphere so much that they wanted even more!"

Guests can expect a star-studded VIP preview evening on the first day of the show, together with an entirely new hall filled with cars belonging to the UK's top 25 clubs; exhibits will date from the Twenties through to the present day. Inspired by past motor shows, live themed entertainment will run between the halls.

The public address system will no doubt be vying for attention with the screaming engine notes from cars tracking down the 'significantly longer' Grand Avenue, the live 'moving motorshow' back for 2016 with a new theme showcasing the cars from six great automotive nations.

Show visitors will get to choose their



favourites from the UK, USA, Italy, Germany, France and Japan, ten cars per country, 60 cars in all: "By assembling ten of the finest classic cars from each of the six nations and parading them along the Grand Avenue, we can ask show-goers to decide for themselves what's their favourite car making country," said Bungish.

Another new feature is the open forum 'Classics Corner', hosted by a range of guest speakers. Dealers and trade stands will also feature prominently.

Tickets, on sale now and over the Christmas period, are priced from £23 and can be booked online at [www.thelondonclassiccarshow.co.uk](http://www.thelondonclassiccarshow.co.uk).

## JAGUAR LAND ROVER TO BUY SILVERSTONE?

**According to sources** including *Autocar* and the *Financial Times*, the Jaguar Land Rover (JLR) group has expressed a desire to buy Silverstone, Britain's premier motorsport venue and home of the British Grand Prix, in addition to rounds of almost every international racing series, plus the biggest historic racing event in the world – the Silverstone Classic.

It is reported that property consultancy Cushman & Wakefield has been asked to assess the market value of the site in Northamptonshire. It is suggested that the track would become the new headquarters for JLR, incorporating hotels, offices and a visitor centre. The entire site has reportedly

been valued at £22.7 million by Cushman & Wakefield, though a formal offer from JLR has not been yet been put forward.

Any prospective deal will only go ahead if the circuit's current custodians – the British Racing Driver's Club – agrees following a poll of its members.

The Club is remaining tight-lipped about details but has admitted to being receptive to all 'attractive' offers. Reports suggest that the Club would retain operational control of the circuit itself, running all racing activities through its Silverstone Circuits Ltd. subsidiary. It is expected that the finalisation of any potential deal is unlikely to take place before 2020.





## CZECH COMEBACK

After a 68-year absence, Czech vehicle firm Praga is returning to the car market with a sports car tilted at the fast road and track day buyer. Its roadgoing R1R, a detuned version on the R1 racer that competed overseas, will go on sale next year with a mid-engined two-litre 390 bhp Formula Renault engine and a six-speed automatic gearbox. 68 R1Rs will be released to commemorate every year Praga has been absent from the roads.

# SPEND NEW YEAR'S DAY AT BROOKLANDS

With the famous Brooklands Museum celebrating the 25th anniversary of its official opening in March 2016, festivities are set to get off to an early start with what is expected to be the biggest New Year's Day gathering of classic cars anywhere in the country on January 1, 2016 from 9am.

The New Year's Day Gathering at Brooklands is set to attract big numbers – last year's event attracted 1250 classics and over 5000 visitors. Next year's event will fill out the Museum's Paddock, Finishing Straight and Members Banking, featuring displays from clubs and individual owners alike. The famous Winter Barbeque returns, alongside the on-site Sunbeam Café which will be serving lunches and snacks all day.



"One of the best things about the New Year's Day gathering at Brooklands is the breadth and range of vehicles that join us," said Museum director Allan Winn. "You can see Austins and Fords alongside Bentleys, Rolls-

Royces and Ferraris, Routemaster buses, classic Minis and Porsches – everybody is welcome".

All visitors arriving in vehicles made before 1973 or newer interesting examples are invited to enter the Museum grounds

via the Campbell Gate (off Brooklands Road). Extensive parking for spectators will be available at The Heights (off Wellington Way).

For full details on 2016 ticket prices and opening hours, visit [www.brooklandsmuseum.com](http://www.brooklandsmuseum.com)

## Tax revenues down

Last October the Driver and Vehicle Licensing Agency (DVLA) removed the need for cars to display a valid tax disc, relying on a computer database and automatic number plate recognition (ANPR) technology to ensure drivers paid the required duties.

The controversial move was implemented as a cost-saving measure – ending the need to send physical tax discs to motorists and other administrative changes made possible by the new system would, according to the DVLA, save taxpayers £10 million.

However, an official study into the effects of the changes has found that they have largely backfired, with the government losing up to eight times the expected saving in lost revenue.

The study, carried out over the summer for the Treasury, found that 1.4 per cent of vehicles (about 500,000 cars) on British roads were being driven without tax – over double the number from two years ago. In the last 12 months the DVLA impounded 100,000 cars for non-payment of tax, which was 58 per cent up from last year. This means that the government has lost around £80

million in tax revenue under the new system, negating any savings achieved.

The new car tax system suffered numerous technical and administrative problems when it was introduced, with the web-based payment system crashing almost as soon as it went live and many motorists failing to receive reminders that their tax was about to expire; without the visual reminder of the tax disc many drivers unwittingly drove while untaxed and were then fined or had their cars clamped. The DVLA still sends out almost three million reminders each month at significant cost.

The DVLA said that it had always predicted that the number of untaxed vehicles would increase 'temporarily' and that it would recoup much of the lost revenue by pursuing and prosecuting tax evaders. Oliver Morley, the DVLA chief executive, said: "Almost 99 per cent of all vehicles on the road are correctly taxed. We have introduced a range of measures to make vehicle tax easy to pay. At the same time we are taking action against those who are determined to break the law."

## LEACY CLASSICS' BUY-OUT BONANZA

Parts specialists Leacy Classics recently published its acquisition of the London Taxi Group (LTG), a spares firm catering for Hackney carriage preservationists. With 20 new jobs at Leacy's Aston Lane warehouse in the offing as a result of the merger, chief executive officer David Keene said the purchase came as part of a company plan to hit £10million in turnover by 2018. "The acquisition of strong businesses like London Taxi Group complements Leacy's organic growth. We are already in the process of recruiting the right people for the new tasks ahead of us," he added.

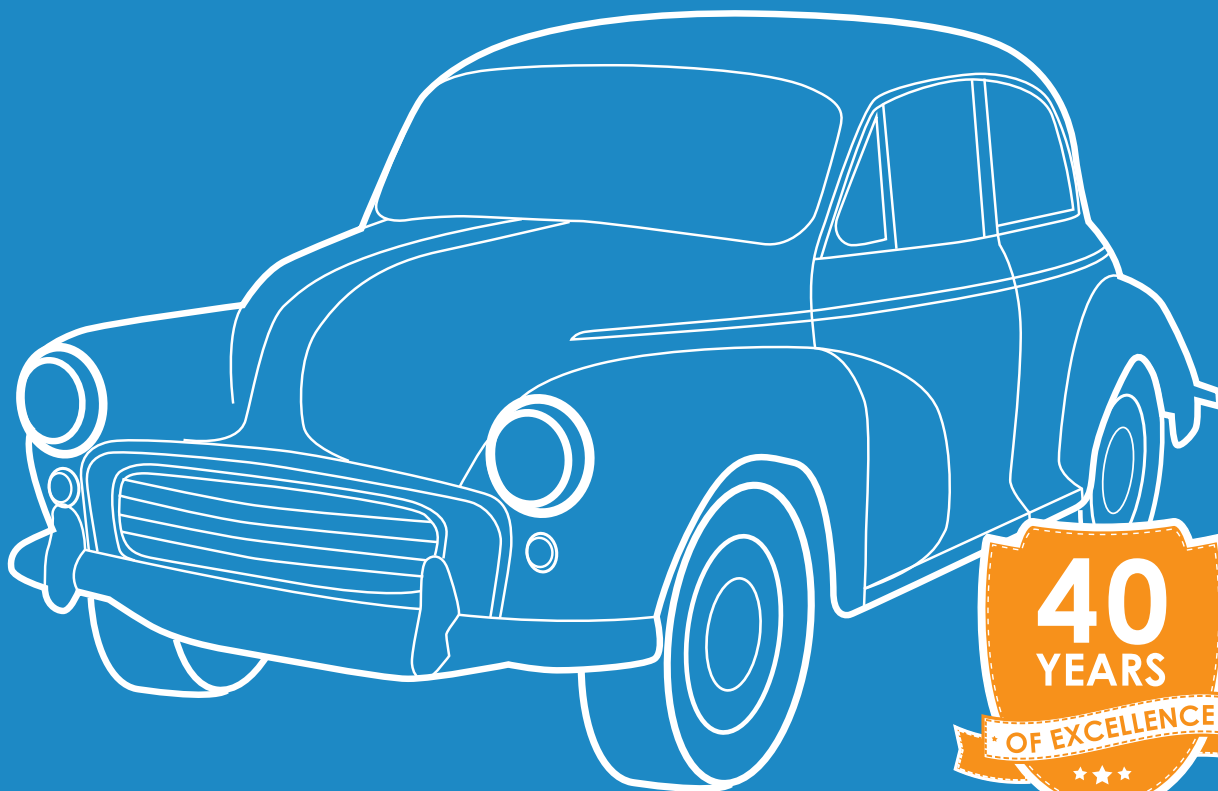
The announcement comes less than a fortnight after the Birmingham firm added Mini specialist Min-Its to its portfolio. Leacy has come a long way since its humble beginnings in a West Midlands unit. Before it bought Min-Its and LTG, it majored in spares for British sports cars – many of

which were manufactured exclusively for Leacy off the back of defunct tooling it purchased over a 35-year period. Leacy will continue to offer these components alongside the catalogues it has inherited from its new subsidiaries; around 5000 Mini parts from Min-Its and 6000 spares for a variety of black cabs served by LTG.

21 historic taxis – all in need of restoration – have joined the Leacy fleet as part of the LTG deal. The oldest of the fleet, a 1930s Beardmore Mk7, is incredibly rare as fewer than 650 were built before the Beardmore works was forced out of business by the success of its arch rival, the Austin FX3. "We are delighted with our purchases. It represents a strategic move into an ever growing pair of international sectors. Min-Its and the London Taxi Group will diversify Leacy's current range of offerings," David Keene concluded.



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## PININFARINA (BY MAHINDRA)

Indian car maker Mahindra has agreed to purchase the world famous Pininfarina design house. With the firm's assets valued at around £105 million, Mahindra negotiated with Pininfarina's majority shareholder Pincar and its various creditors to buy the company outright. Pincar sold its shares, with majority ownership assumed by Mahindra at the beginning of December.

# CHARTERHOUSE COLLECTION SALES

**Charthouse Auctioneers** will be kicking off its calendar of classic car sales in 2016 on Sunday, February 14 (the perfect time to get the ultimate Valentine's Day gift, perhaps?) at the Bath & West Showground at Shepton Mallet in Somerset.

Among the cars submitted for the auction so far are two private collections from long-time car enthusiasts – Robert Johnson and Derek James. Charterhouse's associate director, Matthew Whitney, said: "Robert has had a lifelong interest in cars as a garage owner in Hertfordshire and has competed in LEJOG, Monte Carlo Classic and London to Cape Town rallies, as well as repairing and selling cars for decades. He is now converting his garage into a bungalow and losing all his storage space."

Johnson's cars going under the hammer are mainly British classics from the Fifties



and Sixties. They include an Austin Westminster (estimate £4000-6000) and a Humber Hawk estate (£6000-8000), both of which have FIA rally papers. There is also a Humber Hawk saloon (estimate £4000-6000), an MGC GT (£7000-10,000), an

Austin Somerset (£4000-6000), a Triumph Herald 12/50 (£2000-3000) and, breaking the British theme, a Mercedes-Benz 250 Coupé, valued at between £7000 and £10,000.

The other collection comes from the estate of the late Derek James. The list of cars submitted for the sale includes a Rolls-Royce 20/25 with a Brooklands Special body (estimated at £18,000-25,000), a Silver Cloud S2 (£25,000-30,000), a Silver Shadow (£3000-5000), a Bentley Turbo R LWB that was once owned by designer Jasper Conran (£9000-11,000) and another Mercedes-Benz, this time a 350SL valued at £4000-6000.

For further information on the upcoming auctions, contact Matthew Whitney by calling 01935 81227 or by visiting [www.charthouse-auctions.com](http://www.charthouse-auctions.com).

## Apprentices required

**Automotive apprenticeship** provider North London Garages (NLG) has alerted *Classics Monthly* to a chronic shortage of pupils for its accredited Classic Vehicle Restoration Programme. "There simply aren't enough trainees coming through the ranks," rued John Pitchforth, North London Garages' business development director.

NLG began its recruitment drive on Tuesday, September 1 with the aim of signing up 12 students in London and the Home Counties; four learners are currently on board. "We can meet quota with 10 people,"

John explained. "Ideally, I'd like 12."

Last year, the Federation of British Historic Vehicle Clubs (FBHVC) obtained OFQUAL recognition for its Restoration Programme syllabus, which was duly adopted by a number of academies and vocational schools around the country.

Despite FBHVC support - and the promise of up to £1500 as a stipend for taking an NLG apprentice on - the academy has struggled to attract classic restoration firms to their classic vehicle programmes. "We've no shortage of companies in the

rest of the automotive sector - there's over 150 garages on our books which repair and service modern cars ready to train students up," offered John in comparison. "With older vehicles, there seems to be a mentality of resistance among some (but not all) specialists; they claim there's too much at stake by letting apprentices loose on a car".

The exception which proves the rule in all of this is NLG's partnership with Essex-based P & A Wood, the respected Rolls-Royce and Bentley restoration firm. Earlier in the year, it announced an extended four-year vehicle restoration course, based around the FBHVC's syllabus: "P&A Wood

quite rightly realised that the skills in which it was relying on were slowly dying out; we were hoping that it would set an example which the rest of the industry will follow. Although retired, a lot of the specialists want to pass on their knowledge. Sadly, we're at a critical stage where this can't last forever," John asserted. "P&A is well on the way to delivering a world class apprenticeship programme - the students involved will end up with an enviable CV."

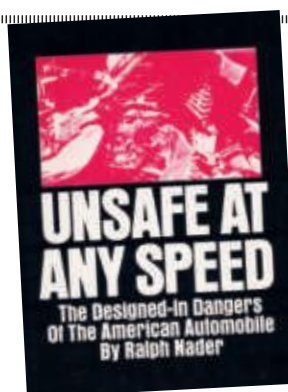
Interested parties should contact NLG's recruitment line on 020 8805 6967 or email [info@nlgta.co.uk](mailto:info@nlgta.co.uk). P & A Wood is also looking for students - call 020 8344 6370 for more information.

## DID NADER KNOW BEST?

**Unsafe At Any Speed** – the crusading publication which prompted the US 'Big Three' car makers to rethink their safety measures – celebrates its 50th birthday this month. The work of lawyer-turned-consumer advocate Ralph Nader, it revealed serious problems with General Motors' radical new rear-engined family car, the 1959 Corvair. Nader's safety campaign prompted a major redesign for 1965; the second generation Corvair was a far less twitchy car as a result. *Unsafe at Any Speed*

effectively ended the self-regulating era of the American makers, prompting Congress to pass the National Traffic and Motor Vehicle Safety Act a year later, enacting legislation which new cars had to pass in order to be roadworthy. The Corvair wasn't Nader's only concern: the lack of standard fit seatbelts and windscreen design across the industry also came under fire.

Five decades later, Nader has turned his attention towards driverless cars, telling *Automotive News* that, far from being



against most of the technology in modern vehicles, his concern lies with its latest application: "It's leading to the emerging great hazard on the highway, which is distracted driving. Car

makers want to turn cars into mobile offices, entertainment areas. Distracted driving is already generating thousands of deaths per year."

While Nader is a firm advocate of collision avoidance systems, the thought of the driver surrendering control to an automaton is as bad as a Corvair with under-inflated tyres and a missing camber compensator:

"Once the automakers get on to something, they don't know when to stop. The more the driver loses control to the software, the less the driver is going to be able to control the car down the road," he claims.



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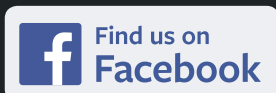
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## BMW SIX ON CARBS

Webcon has announced an intake manifold to allow the fitment of triple Weber DCOE carbs to its straight-six M20 engines. These 'small six' units were fitted in 2.0, 2.3 and 2.5 form to the 3 and 5-Series cars until the '90s. The manifold also allows the engines to be fitted with throttle bodies using the same flange bolt pattern as the Weber DCOE carbs so there's big scope for power upgrades using aftermarket injection set-ups. Made from billet aluminium, the manifold (part number MM2161) retails at £926 including VAT.

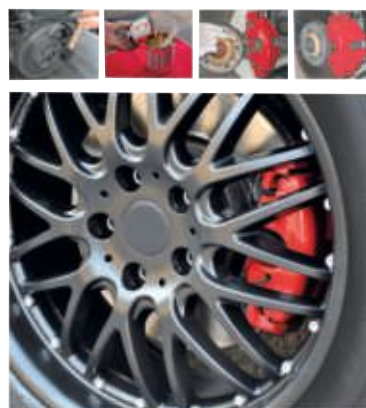


[www.webcon.co.uk](http://www.webcon.co.uk)

PRICE  
£926.00  
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## BRAKING POINT

If you've invested in a nice set of retro alloys, why let the effect be spoilt by a grubby set of brake calipers when you can paint them instead? The thing is, you can't use standard paint which is why German styling specialist Foliatic has developed a brush-applied two-pack paint. It's available in kit form, which includes a wire brush, brake cleaning spray, paint activator, brush, a mixing pot, stir stick and rubber gloves. Available in a range of colours and finishes, including matt, gloss, metallic and neon, the kits, which are sufficient for four calipers cost £29.99.



[www.foliatic.co.uk](http://www.foliatic.co.uk)

# CLASSICKIT

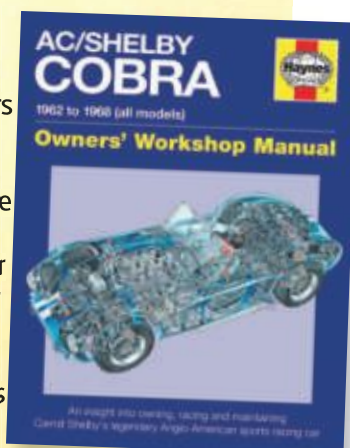
A roundup of the latest essential goodies for you and your car.

## LIFTING THE LID ON THE COBRA

The complex nature of modern cars may have made the familiar Haynes manual a much less important thing than it was, but the new line-up of books looking at iconic cars, aircraft, ships and other machines more than makes up for it. The latest addition looks at the ultimate classic sports car, the AC/Shelby Cobra. The manual includes a history of the model, from the original AC Ace to Carroll Shelby's work creating the Cobra and the development that years of racing success brought to the car, plus an in-depth look at the engine, transmission, suspension, brakes and body that made the Cobra such a success. There are also insights into what it's like to maintain, own and race a Cobra, both back in the Sixties and in the historic race series of today.

ISBN: 9-780857-337863

[www.haynes.co.uk](http://www.haynes.co.uk) 01206 256101



## CLASSIC CALENDAR

It's December and that can mean only one thing – it's time to pick out a calendar for next year in which you can keep those all-important show dates and maintenance reminders. With that in mind, why not go for this calendar that features 12 British classics, from the diminutive Austin-Healey Frogeye Sprite to the Jaguar MkX. It's available to buy at selected retailers priced £5.50 plus postage and packaging.

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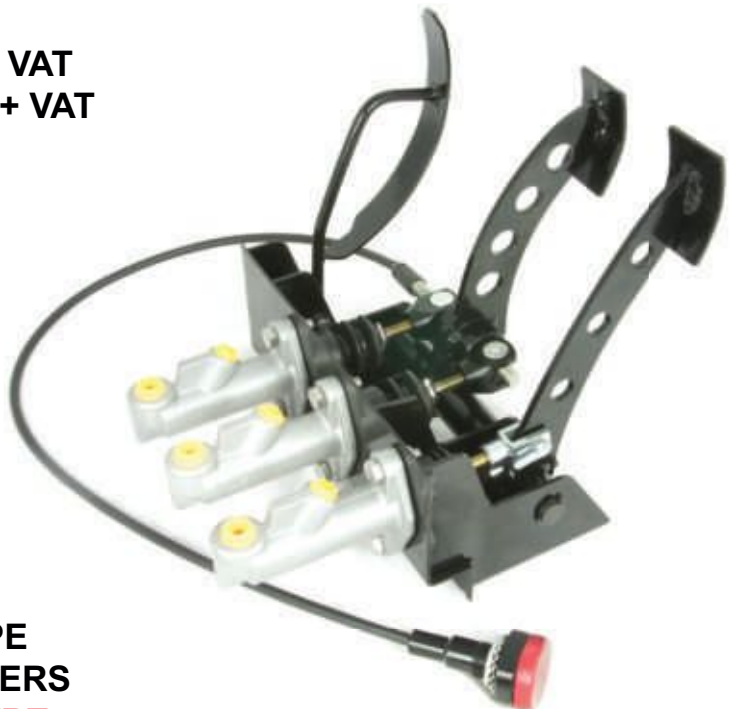
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To meet growing interest in BMW's original 3-Series, Powerflex has made available a whole raft of front and rear suspension and chassis bushes for the iconic E21. Applications include the front arm inner bush, rear anti-roll bar to link rod bush, front arm outer bush, rear axle carrier mount bush, rear diff mount, front anti-roll bar bush, rear trailing arm bush and rear anti-roll bar bush. For classic Bimmers intended for the track there's also the option of going for the firm's stiffer Black Series range.

01895 460033 [www.powerflex.co.uk](http://www.powerflex.co.uk)



## MADE FOR THE JOB

Ever drawn a blank when looking for a specific tool or product when restoring a classic? Well, it was precisely that conundrum that resulted in father and son Garry and Alfie Clement-Boggis setting up business supplying hard-to-get restoration products. Unable to find a suitable rust remover for an MGB restoration, for instance, they developed IReOx, based on a formula that uses molasses. Another novel idea and a better alternative to masking tape is TFACT (which stands for 'tag today, avoid cursing tomorrow'). They're parts tags made from plastic that won't tear and can be written on with pen.

[www.clementandboggis.co.uk](http://www.clementandboggis.co.uk)

## S2000 AT FULL THROTTLE

Omex has just released its new direct-to-head throttle bodies for the Honda S2000 engine at £912. The system is also suitable for Westfield-type kit cars where space is at a premium. The throttle bodies have been designed to use the standard S2000 injector and have the linkage underneath for neatness and to avoid clearance issues with the bonnet. Meanwhile, 50mm butterflies extract the best performance from the engine and proper spindle seals are used to cope with lots of boost, making them suitable for forced induction applications.

[www.omextechnology.com](http://www.omextechnology.com)



PRICE  
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inc VAT

## CLEVER CAM



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Just when you thought that virtually every modification to Ford's Cosworth BDA race engine possible had been done, Kent Cams has come up with not one, but two new profiles. Most cam power gains involve increasing the lift by making the lobes bigger, but there comes a point when the lobes get too big for the bearing housings so Kent took a new approach by increasing lobe area and lift whilst reducing peak cam stress. The new cams for the BDA are available as BDA 279 and BDA 267 profiles and prices start at £614.

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## KEEP YOUR COOL

Before trying different radiators and running the risk of over-cooling your engine, it makes sense to fit an electric fan to ensure engine oil and water are maintained at the correct temperatures. The KLM1418 10-blade electric cooling fan from Mini Spares (£68.48) will only operate as required thus saving on power and ensuring engine temperature is always at its optimum. It will also remove the parasitic power loss that accompanies an engine driven cooling fan. It's also sold as part of a model specific kit which includes an electronic fan controller, mounting brackets and wiring loom.



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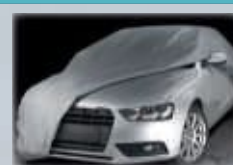
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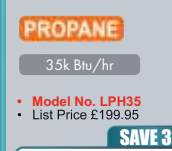
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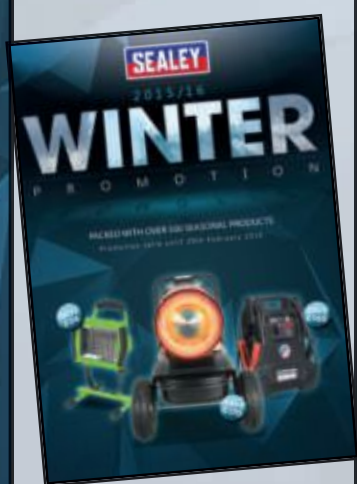
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## Your Letters

Opinions, questions, praise and valued reader feedback.

## PRACTICAL MG

I have read *Classics Monthly* for many years now and always enjoy it. I noticed in your May 2015 issue that you printed an article about the MG Car Club rescuing the Jean Denton MGB, UMD 534F so I was quite surprised when looking through an old *Practical Motorist* from 1968 to find the enclosed Duckhams advert showing what could be the same car with Jean Denton at the wheel.

Perhaps the club would find it of interest?

**Graham Westcott**

## LR Pedantry

I can see you're pleased with your Series 1 Discovery. I used to do a lot of off-road competition in my old Land Rover '90' and we had a few friends who came along in Discos and the difference in driving position and comfort was obvious. They were quite capable off road, the only problem being that they suffered more (expensive) body damage. My interest now is my two Triumph TR7's, one with a Rover V8 3.5... still in bits but it's work in progress!

Just to be pedantic, the alloys on your vehicle are in fact known as 'Deep Dish' not 'Boost' but I agree they look much better than the original five-spoke steel wheels fitted to the early models.

**Julian Booth**



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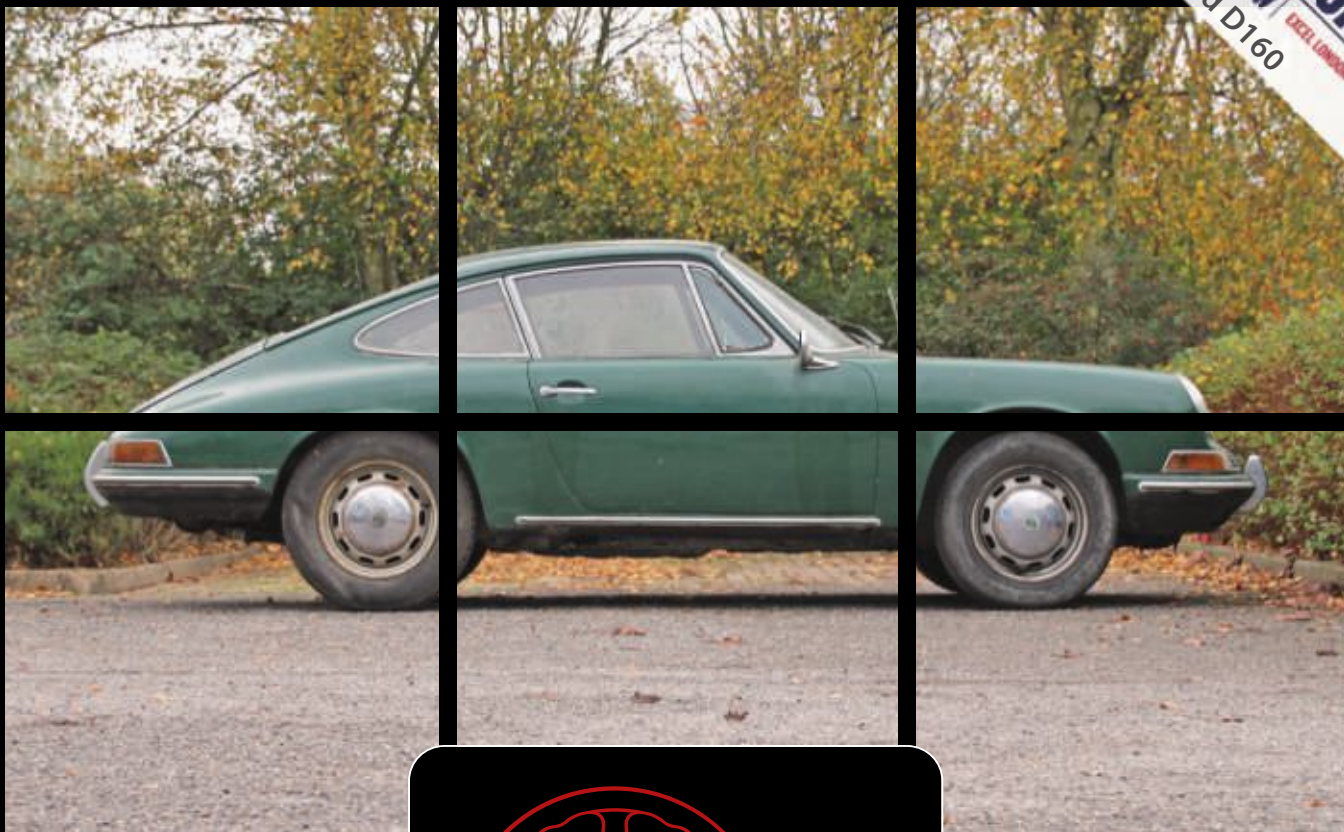


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**READER RESTO**  
1968 Triumph Spitfire

# HART ATTACK

It's taken a few years but a Mk3 Spitfire once featured in *CM* as a 'work in progress' feature now hits the road.

WORDS PAUL WAGER PHOTOGRAPHY MATT WOODS





## READER RESTO

# 1968 Triumph Spitfire

I'd had a Spitfire years before and it was the only car I'd ever regretted selling," remembers Chris Hart of his decision to buy a 38-year old Triumph off the 'electronic Bay'. In truth he'd lost the bidding the first time round but when the original buyer pulled out, Chris struck a deal with the seller and since the car was local ended up taking it on for the princely sum of £800.

That was back in 2006 and regular readers of *CM* may remember Chris featured in our *Work In Progress* spot a

couple of years ago with the Spitfire 'almost' done but as he admits, it's taken a while to finally get to the end of the tunnel.

As bought, the car was a runner but having restored other classics including an MGB, Chris knew what he was in for and was well aware that it would be a 'fixer-upper' at best. It did come with an MoT though, so Chris drove it as-was for about a year before coming to the conclusion that it really needed rather more than a bit of attention every so often.

It was 2007 by the time Chris finally decided, in his words "to really go for it" and started dismantling the car. The separate-chassis Triumphs have an advantage for the home restorer in that with the body and chassis separated, each half is relatively easy to work on and with this car Chris discovered that the chassis was surprisingly solid. Whether it was the car's original chassis he's not quite decided but recalls that the Spitfire turned out to be "a real Heinz 57" when he started stripping it down. "Either the chassis or







the body was original!" laughs Chris, while the bonnet – which forms quite a large proportion of the Spitfire's bodywork of course – turned out to be from a different car.

Unfortunately, the body tub was a different story from the chassis. "I sent it away to be stripped," recalls Chris. "But almost immediately I had one of those phone calls saying 'you'd better come and take a look at this'..."

When the shotblasters had turned their attention to the Spit's main body tub, they

discovered very quickly that all four corners were made not from steel but from fibreglass repairs. Not only that but large parts of the sills were also made from fibreglass and the same method had been used to fill a big hole in the driver's footwell. "Not fist sized, but leg-sized," laughs Chris while trying to forget the danger involved. "To be honest if it hadn't had a chassis to sit on, it would have fallen apart."

However, such is the parts support for classic Triumphs that it was all fixable and since



Front uprights are GT6 parts which provide uprated brakes. Engine is the 75 bhp 1296cc unit which propels the Spit to 100 mph.

## RESTORATION TIMELINE



The Spitfire as bought in 2006.



Rolling chassis could be worked on separately.



By 2010 the body repairs were taking shape.



March 2011 and the Spitfire is finally in paint.





investigation had by then shown that it was the car's original body, Chris decided to repair it – and to do the job properly.

The grinding and welding part of the body repair was handled by Brentwood Classic Cars in Essex, using a big pile of panels sourced by Chris. Some were supplied by TD Fitchett and others by James Paddock, with Chris recalling that the majority were quality British Motor Heritage parts. "If the car had been square, they would have fitted quite easily..." he comments. The body repair list

was extensive and included the floors, the inner and outer sills, boot, arches, front valance, headlight cowl and much more too, but the team at Brentwood stitched it all together neatly into a complete Spitfire once again.

The painted shell was returned to Chris in 2011 and he remembers in particular the 'stunning' job the guys had done with the paint.

While the body had been away, Chris had sourced a correct Mk3 Spitfire engine and a new gearbox and could set about building up the car. As ➤



The Mk3 Spitfire was less spartan inside than the earlier cars.



Refurbished chassis was fitted with correct Mk3 engine and box.



Interior had survived better than the bodywork.



Bonnet section is painted separately.



With the painted shell back home reassembly can begin.





## TECH SPEC

### 1968 TRIUMPH SPITFIRE

#### ■ BODY & CHASSIS

Steel body, separate chassis

#### ■ ENGINE

1296cc OHV

#### ■ POWER

75 bhp at 6000rpm

#### ■ TRANSMISSION

Four-speed manual

#### ■ BRAKES

GT6 front discs and rear drums

#### ■ SUSPENSION

Front: wishbone with GT6 struts. Rear: swing axle and transverse leaf spring

#### ■ PERFORMANCE

Max speed: 100mph

#### ■ ECONOMY

40 mpg

#### ■ WHEELS

Toledo-spec wheels



we've pointed out, the design of the Herald-derived Triumphs means a rolling chassis can be built up separately before the body is fitted, meaning easy access to all the mechanical bits. Well, that's the theory but in practice there's always at least one stumbling block and in this case it turned out to be the brakes. "Whatever I did I

couldn't get the calipers and discs to fit," says Chris who eventually consulted the Triumph Sports Six Club for advice.

After much head-scratching all round, the reason suddenly became obvious: at some point in its life Chris's Spit had been treated to an upgrade in the shape of the larger GT6 front discs and drums. Since Chris had

bought Spitfire-specific parts, nothing would fit without converting the car back to standard Spitfire front uprights, so he's stuck with what is to be honest a handy upgrade. After all, it's part of the car's history and bigger brakes are always useful to have.

It also explains the unusual wheels currently fitted to the car:





## READER RESTO 1968 Triumph Spitfire



the standard Spitfire wheels won't fit without fouling the top of the larger GT6 front uprights and the car is currently rolling on what Chris thinks are Toledo fitment wheels. Needless to say, the long-term solution is a set of GT6 wheels which are currently on the shopping list.

With the brakes sorted, Chris could take his time building up

the car. "I wanted to do everything right, without rushing or bodging it," he explains. "Most of the parts which have gone back on are either refurbished original components or new."

Eventually the body was back on the chassis, the car going back on to the road in early 2015. Chris reckons it's still in the

'shakedown' phase but plans to give it more use in 2016. For the past couple of years, he's competed in the Layer-Marney Cup, which is a kind of classic car regularity/economy run in the Essex area, the idea being to get from one place to another on the least amount of fuel.

For the 2015 event, Chris used his MGB and the next event

should see the Spitfire competing – that is, if he can spare the time from the rebuild of an early '62 MG Midget.

One thing's for certain, Chris won't be parting with the Spitfire this time and reckons it's definitely part of the family now. Just don't ask him what it owes him: "I promised my wife she could add up the bills," he laughs. **CM**







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CLASSIC FORD SHOW - 5TH JUNE - SANTA POD - [CLASSICFORDSHOW.CO.UK](http://CLASSICFORDSHOW.CO.UK)  
PV SHOW - 12TH JUNE - SANTA POD - [PVSHOW.CO.UK](http://PVSHOW.CO.UK)  
JAPFEST 2 - 26TH JUNE - ROCKINGHAM - [JAPFEST2.CO.UK](http://JAPFEST2.CO.UK)  
MINI WORLD LIVE - 10TH JULY - ROCKINGHAM - [MINIWORLDLIVE.CO.UK](http://MINIWORLDLIVE.CO.UK)  
FORD FAIR - 7TH AUGUST - SILVERSTONE - [FORDFAIR.CO.UK](http://FORDFAIR.CO.UK)  
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THE FAST CAR FESTIVAL - 30TH TO 31ST JULY  
DONINGTON PARK - [THEFASTCARFESTIVAL.CO.UK](http://THEFASTCARFESTIVAL.CO.UK)  
JAPFEST MOTORSPORT HEROES - 11TH SEPTEMBER  
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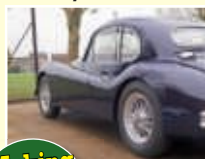
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**READER RESTO**  
Ford Capri 3000 Ghia

# TOP GHIA





The 'car you always promised yourself' is now a rare beast and restoring one can get as expensive as real exotica. We unearth a 3-litre survivor.

WORDS **ANDREW EVERETT** PHOTOGRAPHY **CHRIS FROSIN**

**D**espite being one of the most common cars on the roads a couple of decades ago, the second generation Capri is now one of the rarest classics anywhere with numbers probably in the low hundreds – from the hundreds of thousands which were built.

The MkII Capri arrived in February 1974 to replace the 1969 MkI which had been a major success for Ford. Capri sales had actually been falling and it was hoped that a more practical liftback version might help. While it didn't arrest the gradual fall in sales, it was certainly a popular car and a money maker for Ford.

With the first examples being registered on an M plate, UK versions were built at Halewood until September 1976 when all Capri production moved to the Cologne plant in Germany. Initial models included the L as a 1300 OHV or 1600 OHC, the XL as either 1600 or 2000 OHC (the 2000 V4 had been dropped), the GT as 1600GT or 2000 OHC with a 3000 V6 option and a 2000 or 3000 Ghia. For 1975, a limited edition JPS (John Player Special) 'S' trim was available in either white or black with gold stripes and ornate gold laced interior trim. In May 1976 it was made a regular production model without the tobacco connotations but with plain black trim and

a much wider colour range and replaced the Capri GT. At the same time the 1300 base Capri arrived, and the Capri XL was replaced by a new GL model. New colours such as Roman Bronze, Nevada Beige, Jupiter Red and the bright 'Signal' colours (red, yellow, orange and green) were phased in during 1976.

The Capri II was a success for Ford, but it had the shortest run of just four years compared to six years of the MkI and nine years of the Capri Mk3 which arrived in April 1978. This was a facelift of the Capri II with bigger, ribbed tail lights, a restyled four-headlight front end, new interior trim and gradual improvements to bring it in ➤





# Ford Capri 3000 Ghia



The 3-litre Capri ran the Essex V6 motor. This one required just a new starter and water pump despite its long storage.



line with the Cortina and Granada ranges.

SFL503R is a mid run example of the Capri 3.0 Ghia that was registered in July 1977 at a Peterborough Ford dealership. Costing £4434 with the three speed C3 'Bordeaux' automatic gearbox, this was the most expensive Capri – the 3000S was a lot cheaper at £3509, as was an RS2000 £3519 but the much slower Porsche 924 was a whopping £6999. The Capri

3000 may not quite have been bargain basement, but there was never anything around to touch it for performance at the price with the more stiffly sprung and sporting 3000S model half the price of that 924. Just about the only thing that was in the running was the £4999 Alfa Romeo 2000 GTV Alfetta with 130 bhp.

This 3000 Ghia is a Nevada Beige model and like virtually all Ghias has the Ford C3 automatic

box and power steering as standard. Buyers could opt for the manual version of the Ghia at no extra cost but most buyers wanting a manual 3-litre went for the cheaper S model. The Ghia trim level looks laughably simple today – no air-con or electric windows – but it was a big deal in the day. Standard equipment over the GL included a vinyl roof, sliding steel sunroof, big plush front seats with integral 'tombstone' velour trim and

carpeting halfway up the doors, a six-instrument dash with an ammeter, oil pressure gauge and separate fuel and temperature gauges, all set in a wood veneer-type panel that was different and darker to the formica type stuff used on the L and GL. A nicer leather-trimmed steering wheel was used along with a front passenger grab handle above the glovebox. Tinted glass, a rear wiper, a chrome-rimmed front grille with





a silver crossbar and subtle but noticeable Ghia badges on the side and tail – this was a prestigious package back in the day.

The 3-litre Essex engine was pretty much unchanged since the Granada appeared in 1972. This all-iron pushrod unit developed 138 bhp with a Weber 38DGAS twin choke carburettor, and whilst it wasn't keen on high revs, it didn't need to be thanks to prodigious torque (174 lb.ft at 3000 rpm)

and the superb long gearing Ford gave it. With a nice long first gear the manual version could streak away from the lights and hit sixty in eight-and-a-bit seconds and the automatic version wasn't a lot slower either.

Capri fan Adrian Williams from Derby bought his first Capri in 1977, a now-rare 3000E that was the 1971 model with the revised 138 bhp engine due for the Granada, revised suspension and steel sports wheels. Now it's a seriously rare and very

sought-after model but of course they were cheap boy racer specials by that time. Adrian bought this superb Capri II Ghia in May 2015, and if you're wondering why we refer to it as a Capri II and not MkII, it's what Ford called the car – look on the tail of a non Ghia model and you'll see the red 'II' decal underneath the black and chrome Capri script.

The good thing about this particular car is that it wasn't a rusty pig requiring a total rebuild.

Most 1977 Capris were teabags by 1987 and despite the care it was given, my own father's R-registered 3000S had a rusty tailgate at five years old. That's just the way cars were back then. This example had thankfully been stored for 27 years, and only had a paltry 46,000 miles on the clock backed up by a string of MOTs from its first test in 1980 to 1985. Not only that but it was a German-built example. They were always better made and a bit more rust ►



**Ghia-spec interior is basic by modern standards but was the business back in the day. Automatic suits the V6 car well.**





**READER RESTO**  
**Ford Capri 3000 Ghia**





## READER RESTO

### Ford Capri 3000



#### TECH SPEC

##### 1977 FORD CAPRI 3000 GHIA

#### BODY AND CHASSIS

Steel monocoque

#### ENGINE

2997 cc V6 OHV

#### POWER 138 bhp

#### TRANSMISSION

3 speed automatic  
(Ford C3)

#### BRAKES

Front solid discs,  
rear drums

#### SUSPENSION

Front MacPherson struts  
Rear Live axle with  
leaf springs

#### WHEELS

13 inch mag alloys with  
185 section tyres

#### PERFORMANCE

Max speed: 122 mph  
0-60 mph: 9 secs



resistant than the Halewood cars and it's possible that being an automatic Ghia, it had an easier life that most manual S versions enjoyed!

"I bought this one in 2015 as I always fancied another Capri after that 3000E. I was 19 when I had that," Adrian says. But after being stored for so long, the car needed a thorough overhaul doing. Not engine rebuilds or anything like that, but starting at one end of the car and reaching the other end after everything had been cleaned up and serviced. The Essex motor needed an oil and coolant change plus the usual plugs, points and tappets doing. All nice easy work and on the Essex, the distributor is at the front of the block and not buried at the back as it is on the 2.8 Cologne engine in the Injection Capri.

The starter motor and water pump were both in need of replacement and the exhaust wasn't a lot of use – this was

replaced by a stainless steel Sportex system from OnLine Exhausts in Litchfield because believe it or not, Ford has now stopped selling Capri exhausts, which is rather unsporting. Mansfield Radiators supplied a new radiator whilst a new set of hoses was supplied by Capri specialists Tickover.

Capris of this age had steel and brass radiators and they just don't like being stood for years with the coolant stewing away inside them. Replacing the radiator was simple work though, just a few half-inch bolts and the hoses, and out it came.

You'll have noticed also that this one isn't wearing the original Ghia alloys. We're not completely sure what they are but they look like an early version of the Starmag – they're slightly wider than the standard alloys (that Adrian has stored away) and fill the arches more convincingly that the originals ever did. Period RS alloys would have been

another option but somehow these aftermarket wheels suit the Ghia better. Eden Tyres & Services, Sutton in Ashfield did the honours with new boots and fitting. Other period accessories include Lucas fog and spot lamps, whilst Adrian had had the rocker covers repainted in the same beige as the car.

In many ways Adrian was lucky to find a car that needed the lightest of restorations because restoring a knackered Capri is now very hard work and extremely expensive. The car itself is very simple to work on, but they can really rust and you'll be sending your MIG welder to a retirement home after you've finished. Parts supply is also an absolute nightmare because apart from some mechanical bits, nothing is available new without serious money involved.

Ford stopped supplying panels 20 or 30 years ago and faced with a pair of rusty front wings, about your only option is

to carefully drill out the spot welds to remove them intact followed by sandblasting and welding in new sections. A set of Ghia side strips with one missing recently sold for over £400 on eBay and you have almost no chance of replacing a ruined interior. You would need to find a trimmer who is both very good and who can locate similar fabric.

Adrian was lucky to find this car in such great condition and there can be very few with such low mileage in what is still basically unrestored condition. **CM**

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# QUINTESSENTIAL QUATRELLE

The Renault 4 was a successful exercise in automotive minimalism that went on to become the best-selling French car of all time. We look at a rare survivor.

WORDS IAIN WAKEFIELD PHOTOGRAPHY CHRIS FROSIN







**F**rom dozens of R4s threading their way through London's fashionable streets to scores of battered examples being driven on their hubcaps around the Arc De Triomphe in Paris, the model was a massive sales success for 'Reggie' Renault and this gangly little estate went on to make the record books as the company's first front-wheel drive car. Today, this basic little four-door Renault may have almost disappeared from our roads but at least the R4 is recognised by collectors of classic factoids as the model that redefined the family car as well as being the first mass-produced hatchback.

Launched in 1961 along with the even more basic R3, the 747cc R4 replaced the post-war introduced rear engine 4CV and was Renault's answer to Citroen's sir cooled tin snail. Although the stripped out Renault 4 was cheap and cheerful, it appealed as much to trendy city-bound growing families as it did to hard working

country dwellers and farmers and became a genuine 'Peoples' Car'.

Over eight million versions of the Renault 4 were built in factories around the world, including Mexico, Portugal, Ireland, Morocco and even Australia before production finally came to an end in 1994. In fact more than one million Renault 4's were sold in the first five years of production, a figure probably boosted by the car being marketed as a small estate. The motoring press of the day praised the R4's huge amount of interior space, which could be cleverly configured in a multitude of different ways.

This high level of practicality included removable seats and was light years ahead of the competition. A period Renault sales brochure for the four-door R4 promoted the car's flexibility and stated the interior had space for 'children, prams, wives, groceries, husbands, dogs, bags, baggage and room to spare besides.' Just what else you could stash away ➤







The 845cc motor was derived from the Dauphine unit and soldiered on until 1986 in the base model R4.

“If the motoring press described the base R4 as utilitarian, then the R3 was as sparsely kitted out as a private car could possibly get.”

in a 365.5cm long Renault 4's cabin with that lot packed away the brochure didn't say, but the car sold like the proverbial hot cakes in the UK as it offered great value for money.

If the motoring press described the base R4 as utilitarian, then the R3 was as sparsely kitted out as a private car could possibly get. Although the two cars shared the same body and a large number of mechanical components, including a three-speed gearbox, the water-cooled 603cc powered cut-price R3 lacked glazing in the

chunky C-pillars as well as interior comforts such as door cards and a passenger's sun visor. However, the model undercut the two-cylinder 2CV by a few Francs and together with the more powerful and equally basic R4, introduced a host of working class French families to the joys of motoring.

Despite the low cost of both these range openers, a poor take up saw the R3 and basic R4 axed by 1963, leaving the better equipped R4L to carve a niche for itself until the De Luxe version, or Super depending on

markets, arrived complete with the luxury of opening rear quarterlights and extra trim. The better equipped Super also received the more powerful 845cc engine as used in the rear engined Dauphine and by 1965 the R4L was being sold as the 4L after the company deleted the 'R' from the model name. Despite there being a decent selection of small cars on the market in the early '60's, none had five doors, were cheap to run and provided as much fun to drive as the baby Renault.

Success came quickly and one

million Renault 4's were sold in the first five years of production. Inside, the Renault 4's most notable feature was its dashboard-mounted push, pull and twist gear lever, which cleverly operated a conventional 'H' pattern on the gearbox via a long rod running over the top of the engine's rocker cover. The R4's front-wheel drive power train was mounted 'back to front', which meant the car's three-speed gearbox/transaxle (four-speed from 1968) was located directly behind the car's plain anodised aluminium grille.





Renault pioneered what would become its mainstream 'sealed for life' cooling system with the R4. This was supposed to do away with topping up the system and the coolant was expected to remain in the radiator for the life of the car – not a great idea as experience proved that even top grade anti-freeze will degrade over time.

Despite most cars introduced around the same time having a unitary constructed body, the new baby Renault was built around a separate chassis. This semi-monocoque method of construction allowed Renault to build new models, such as a van, pick-up and other variants much more cheaply and easily.

The Renault 4 employed an innovative four-wheel independent suspension set-up comprising all-round torsion bars, while at the rear the wheelbase on the right-hand side of the car was shorter than on the left. This strange arrangement was in order to mount the rear torsions bars one behind the other, an odd configuration that surprisingly didn't affect the car's handling. All four wheels were damped by telescopic shocks; the rears being mounted horizontally so as not to intrude into the car's useable load space.

The basic shape of the Renault 4 remained virtually unchanged throughout its production run, the only

exception being the location of the fuel filler cap as this was raised a few inches for safety reasons not long after the car was launched. In 1967 the Renault 4 received a few external nips and tucks, one of the first being a new style of aluminium grille. This gave way to a plastic version in 1978; the year Renault dropped its new 1108cc four-cylinder engine into GTL-badged models. By now moulded plastic parts were starting to replace a lot of the car's exterior chrome trim. Over the years there were three basic dashboard designs fitted to the Renault 4 and the tried and tested 845cc unit soldiered on in base and intermediate models until 1986, the year the ➤



#### TECH SPEC 1976 RENAULT 4TL

■ <b>ENGINE:</b>	845cc inline-four
■ <b>POWER:</b>	34bhp at 5000rpm
■ <b>TORQUE:</b>	43 lbf.ft at 2500rpm
■ <b>TOP SPEED:</b>	71mph
■ <b>0-60:</b>	21 secs
■ <b>ECONOMY:</b>	Miserly
■ <b>WEIGHT:</b>	670kg



The TL spec was an upmarket trim level. Dash-mounted shift takes some getting used to.





once ground-breaking Renault 4 stopped being officially sold in the UK.

The car we're testing here belongs to Adrian Williams and if you recognise his face from the photographs, he's the same guy that owns the superb MkII 3.0-litre Capri that's also featured in this issue. When I turned up with snapper Frosin to road test and photograph the Ford, this smart 1976 Renault 4TL was parked alongside Adrian's

Triumph Stag, so it seemed rude not to turn the lens on this neat little French fancy as well the Capri. It's a long time since I've seen a right-hand drive Renault 4 in such good condition and Adrian was quick to point out that he was very lucky to have found the car as he'd just bought it from a friend in the motor trade. As Adrian went on to explain: "After a young girl passed her test, she was apparently given the Renault by

her family. However, for some reason she didn't think the Renault was cool so her father sold it to my pal and bought her something more suitable."

Adrian was obviously in the right place at the right time and snapped up this little 4TL and says he was completely blown away by the condition of the car, especially as it only had 37,000 miles on the clock.

Closer inspection revealed this survivor appears to be in totally

original condition but as Adrian pointed out, the car unfortunately came with no history, not even an old MoT. First thing Adrian did was to get his 4TL tested and the only jobs needed doing to get a fresh ticket on the car was to have the steering rack adjusted and a new ball joint fitted. This is Adrian's first Renault although he admits he came very close to buying a Gordini-badged 5 about 20 years ago. "What I like about my 4TL



Managing Ed Iain enjoyed reacquainting himself with the R4. Load space is massive with the seats folded.



“This is Adrian's first Renault although he admits he came very close to buying a Gordini-badged 5 about 20 years ago.”



Torsion bars and skinny rubber mean a typically French ride.

is how easy it is to drive”, said Adrian as he went to explain that when the car was on the ramp being MOT'd, he was surprised how clean and rust-free the underneath was.

Other than a few little areas of bubbling breaking through the paintwork around the base of the tailgate and lower edges of the bonnet below the side light clusters, the rest of the car looks to be in exceptional condition especially the interior.

Adrian explained how he intends to get these few niggles attended to over the winter and was keen for me to get behind the wheel and enjoy a spin in this rare little survivor. Sometime ago I had a neighbour who had a succession of these cars, so once behind the wheel the layout was very familiar. What I liked about this 4TL was the generous amount of clear space under the dashboard, obviously helped by having the gear lever mounted on the dash and an umbrella-type handbrake lever.

Once I'd refreshed myself with the 4TL's unusual gear selection and worked out where first and reverse were, we were off and I was surprised how the Renault

picked up its skirts and got stuck in, mixing and matching with the traffic while negotiating Derby's busy ring road. The Renault's sub 1.0-litre engine appears to have plenty of punch and once up to the legal limit, cabin noise thankfully dropped to a level where I could actually hear what tune was playing on the car's aftermarket radio.

Despite having drum brakes all round, the 4TL pulls up smartly and the ride is extremely

comfortable and typically French, helped no doubt by the skimpy but surprisingly supportive seats.

I really enjoyed floating around in Adrian's 4TL and very reluctantly handed back the keys after we finished taking our photographs of it in Allestree Park on the outskirts of Derby. This is a car that attracts plenty of attention when it's out and about and everywhere we went nearly everyone waved at us, especially while filling up with

fuel where we gathered quite a crowd. I cheekily asked Adrian if would consider selling me his Renault and I think for the right money he may be willing to part with it. If you fancy picking up an attractive French fancy of the automotive type, give Adrian a ring on 075010 843761 and make him an offer he can't refuse but he may take a bit of persuading as he admitted this cheeky little 'Reggie' is growing on him. **CM**





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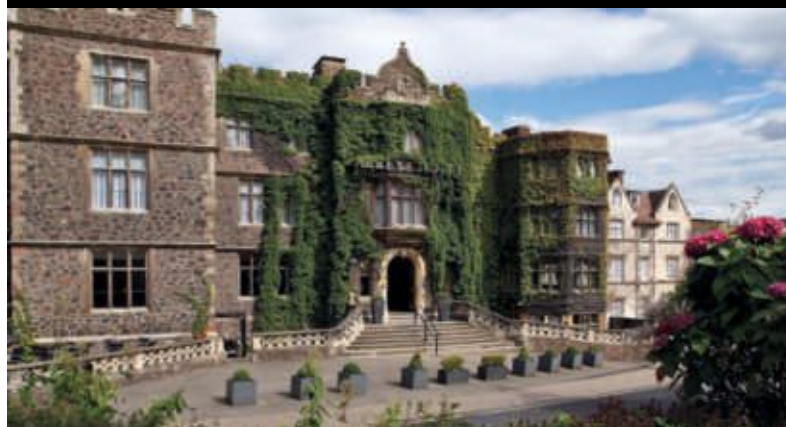


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## Will Armston-Sheret

### Contributor

Will has been collecting classic cars since before he could drive and now has quite a fleet of Morris Minors. He's currently slowly doing up his dream car, a 1950 Morris Minor Lowlight.

### MY FLEET

#### 1965 MINOR

ENGINE: 1098cc inline-four  
OWNED SINCE: 2012



#### 1967 MINOR

ENGINE: 1098cc inline-four  
OWNED SINCE: 2010

#### 1950 MINOR LOWLIGHT SALOON

ENGINE: 918cc sidevalve inline-four  
OWNED SINCE: 2012

#### 1970 MORRIS MINOR VAN

ENGINE: 1098cc inline-four  
OWNED (BY MUM) SINCE: 1980

## To-do list

- Sandblast Lowlight panels
- Find a paint shop for the Lowlight
- Finish fitting the wings on the Lowlight
- Source missing bits for the Alfa head
- Fix Lily's rear wing DONE

### THOUGHT OF THE MONTH

Never under-estimate just how long it can take to get doors to fit correctly. Doors that don't fit or shut properly notice on the finished vehicle very badly. This is why a two-door car is significantly easier to restore than a four-door one.



# Minor maintenance

**W**hy is it that every project soon spirals out of control to be much more time consuming than you ever hope or expect? As I mentioned last month, I decided to rectify the crack in the rear wing of Lily. The bottom flange was split; I had hoped to fix it in situ, by welding a strengthening plate in from behind.

However it soon became clear that this wasn't possible so with this in mind, I whipped the rear wing off to do the job properly. Thankfully, I had foreseen this eventuality three years ago, when I fitted the wing and made sure to coat the wing bolts with copper grease. This proved very effective and despite all the salt spray they must have received, they all came out easily.

With the wing off it was easy to fix the crack; the damaged metal was removed and a small replacement plate welded in. After grinding down the welds and a few skims of filler, which were rubbed back, it was ready for painting—which I was able to do in the warm and achieve a good finish.

If I were being a perfectionist I would cut it back, but as it is, it fits in well with the rest of the

paintwork. This sadly has begun to develop some micro blistering. I'm not too sure why – maybe I put the top coat on too soon after wet flatting the paint, or perhaps it was the daily driving and keeping it outside in the winter. Or, was it the cellulose paint I used, which I have heard is not the same quality as the old stuff? Whatever reason, it's

going to need a respray at some point in the future, so the rear wing was perfectly in keeping with the general look of the car.

Anyway, on a more positive note, after refitting the wing I took Lily for an MoT and I'm happy to say she passed. Here's to another year of Minor motoring!

In light of the paint debacle on



The Lowlight slowly moving on. Note the change from epoxy to car body filler.



“On a more positive note, after refitting the wing I took Lily for an MOT and I’m happy to say she passed.”



Getting the kick plates to fit properly involved a lot of fettling.



After cleaning out the old wheel bearings they were ready to refit to the car.



The rear wing was immediately looking much better after repair and respray.



The rear wing pictured before the repair work started.



The rear wing repair turned into a much bigger job than expected.

Lily, I’ve made the executive decision that I won’t be doing the topcoat, or any spraying on the Lowlight. She’ll be shipped out and painted in two-pack paint. Before I can get it sprayed it needs to be moveable, so I can either tow or trailer it to a paint shop.

In addition to a well-earned break from rubbing down, filling and panel fitting I have been sorting out the rear axle. Lowlights have an earlier Morris rear axle, which is very different from the Austin one fitted on later Minors.

This was a bit of a pain, as I couldn’t raid the stock of spares for some good wheel bearings and other parts needed to put the axle into working order so before shelling out for new wheel bearings, I decided to have a bash at cleaning the original ones out.

After washing with paraffin and blowing clean with an airline they were turning smoothly, with no play, so I decided to reuse them. The oil seals are different from later Minors too—these fit in the rear back plates—but thankfully I was able to find some new parts online which fitted without trouble.

Progress with the Lowlight’s bodywork continues steadily and now I’m happy with how both doors fit. As I’ve replaced huge parts of both the sills I thought it prudent to check how the sill covers, or kick plates fit.

Unsurprisingly after the amount of welding that has been done there was a just a bit of fettling needed... but after a few hours of grinding and hammering, the doors fitted with these in place. Slowly and steadily the number of fettling jobs is decreasing, the next big job being rubbing down... **CW**





## Gez Hughes

### Contributor

Gez longs for the simpler life, so his fleet consists of cars that can be run on pennies and fixed with a spoon. A lifelong fascination with motors built in the heyday of the British motor industry means there's always something that needs fixing.

#### MY FLEET



#### 1975 AUSTIN 1800

ENGINE: 1798cc inline-four  
OWNED SINCE: 2009



#### 1972 NSU PRINZ 4L

ENGINE: 596cc air-cooled twin  
OWNED SINCE: 2008

#### 1991 MAZDA EUNOS

ENGINE: 1590cc inline-four  
OWNED SINCE: 2013

## To-do list

- Have a look at the Landcrab's last MOT and make sure all advisories have been addressed, and check that everything else is in good order.
- Time for yet another visit to the MOT station.

### THOUGHT OF THE MONTH

Practice what you preach. I'm always telling people that the worst thing for a classic is allowing it to sit idle, no matter how good your storage is. Check it over regularly, start it up and get it warm, and if possible, keep those wheels turning. Only then will you find everything still works when it comes out of its winter hibernation.



Out in the daylight, a filthy Landcrab gets a jump start from my everyday Peugeot.

# The Landcrab lives

With the NSU finished and roadworthy, and some valuable space cleared at the lockup, there was at last some room available to work on the Landcrab. The 1800 had somehow dropped down the list of priorities to the

point where it had been stuck behind several other cars and a thick layer of dust and grime had built up on the paintwork.

I don't know why I'd neglected it for so long - just before being relegated to the no-use zone, it had received a massive amount of work on the underside to

make sure it passed its next MoT. First job was to get the car outside, and then use my Peugeot daily driver to jump start the engine. The Landcrab's battery had been living on borrowed time. It was fitted to the car when I bought it ten years ago, and I've no idea of



After a bucket of soapy water and a bit of elbow grease, the Crab looks more like its old scruffy self.



“...the 1800's B-series engine coughed into life and ran sweetly, showing no ill effects from its long period of hibernation.”



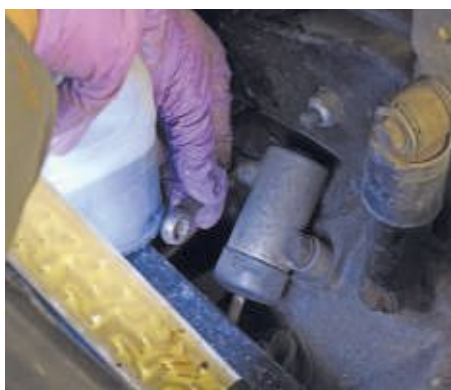
Old battery had breathed its last, but it was obviously a quality item having given at least ten years' service.



When the clutch failed to disengage, the finger of blame was pointed at the hydraulics. Slave cylinder was dry and fluid-tight.



The system was bled through a couple of times but to no avail. The problem proved to be a stuck driven plate in the clutch.



A new Yuasa battery was fitted and normal starting has been restored.

how old it was at that point. I can't moan that I hadn't had my money's worth. The last time it was used it was getting reluctant to hold a charge, so the latest period of inactivity had clearly finished it off.

Pleasingly, with the jump leads connected, the 1800's B-series engine coughed into life and ran sweetly, showing no ill effects from its long period of hibernation. The problems started when I tried to engage first gear. Pushing the lever forward only resulted in grinding from the gearbox. I convinced myself that the clutch pedal felt 'wrong' and diagnosed air in the clutch hydraulics, or failed seals.

I checked beneath the dust

cover on the slave cylinder, and finding it dry, the clutch was bled through. Still not convinced that it was working as it should, and lacking an assistant to push the pedal as I watched what was going on under the bonnet, I positioned an old wing mirror on the slam panel, cunningly angled so I could see the clutch actuating lever. It was quite clear that when the clutch pedal was depressed, the lever was going through its full travel.

So why wasn't the clutch disengaging? A quick call to a mate to talk the problem through, and we both quickly came to the same conclusion: we suspected that the driven plate had become stuck to either

the pressure plate or the face of the flywheel.

There are two ways to rectify this. The civilised way involves stripping the clutch down. That's a massively involved, engine-out job on the Landcrab. The second way is not so civilised. Start the car in gear, build up a bit of speed, and then stand on the brake and the clutch at the same time, hoping that it will break the hold between the two stuck parts.

I've had a thrust bearing fail in the Landcrab before. It's a carbon type which doesn't take kindly to rough treatment, so I decided to give the uncivilised method a couple of tries, and then, if the clutch was still stuck,

I'd have a rethink. Bunny hopping up and down the service road, I was starting to worry that it might be a case of engine out. After three attempts and still no joy, I decided that the risk of damaging the thrust bearing was getting too great, so I swung the car around in first gear and headed back to the lockup. And as I coasted towards the open door, the clutch popped free. A quick run around on the private roads showed no ill effects, the clutch taking up drive smoothly with no unpleasant noises.

On my next visit, I'll give the car a proper once over and hopefully, get it along for an MoT. **CM**





**Scott Higgins**

## Contributor

Scott has always been an engineer at heart: Lego, Meccano and disassembly of anything that stays still for too long being obvious symptoms. After serving an engineering apprenticeship at Land Rover Solihull, he now works in product development.

## MY FLEET

### 1961 AUSTIN-HEALEY 3000

ENGINE: 2912cc inline-six  
OWNED SINCE: 2013

### 1961 AUSTIN-HEALEY FROGEYE SPRITE

ENGINE: Not fitted yet  
OWNED SINCE: 2013

### 1951 LAND ROVER SERIES ONE

ENGINE: 2994cc V6  
OWNED SINCE: 2014

## To-do list

- Chase body shop up
- Finish 109B build
- Rebuild Starter
- Rebuild carbs
- Rebuild master cylinder
- Refurb steering wheel

## THOUGHT OF THE MONTH

I think I'll save up for a lathe. I'm finding a number of situations where it would be useful: turning bearing press tools, carb linkages, commutator turning are just a few recent examples. Plus they are a lot cheaper than they used to be.



Ram tubes look good on the rebuilt carbs but don't offer much in the way of filtration.

# Starters and carbs

**Y**ou guessed it. No painted shell yet although they have started! Better than that I have dropped off the other shell and they have started both. Hurray! I had better make sure I have a pile of bits ready for them. This month it's the starter and twin SU carbs.

Starting with the starter, naturally I stripped it down by removing the brush plate first. Thankfully the brushes didn't need changing as while they are available there are some big soldered joints in there that are beyond my soldering iron capability. The pinion end came out easily enough and despite being stored for a while the pinion wasn't seized or gunked-up.

The pinion is under constant pressure by a big spring against a circlip and the manual simply states 'compress the spring'

which is easier said than done! The nearest thing I had to a spring compressor was a bearing puller but wasn't suitable as the spring needed to be pushed away from the tip of the pinion where the circlip lay. A valve spring compressor would have worked but wasn't big enough and a socket and press was a potential idea but the socket would prevent access to the circlip.

I went for the press and to overcome the access issues I used a couple of spanners. It worked a treat. Once disassembled I could remove the Oilite bearing and swap with one I had already soaked. The rear bearing was changed too and after a good clean-up the starter was rebuilt with care taken to ensure the isolators were correctly placed. Upon assembly I did a quick resistance check and then used a couple of booster cables to

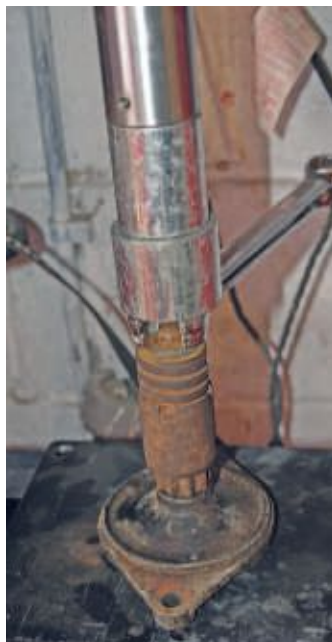
test it. It worked perfectly. Result!

Next up was the carb rebuild. I decided the best course of action was to rebuild one carb at a time so I always had a reference carb if I got stuck on how it went back together. It was then a simple case of complete but methodical disassembly and there were no real challenges here, the only fiddle being the removal of the butterfly. I then gave everything a really good clean, this encompassing a good soak in the parts washer, a good scrub with a soft brass brush and copious amounts of carb cleaner. I also used a little ultrasonic cleaner I have. It's for jewellery really so a bit on the small side but ideal for carbs and cheap too. The rebuild kit came with a new throttle spindle shaft and replacement bearings.

This area is subject to wear as



“The pinion end came out easily enough and despite being stored for a while the pinion wasn't seized or gunked-up.”



Press was used on pinion spring.



The starter rebuild. Luckily the soldered-on bushes could be reused.



Carbs required a good clean before work could begin.

the spindle runs directly in the alloy SU body, this then leads to air leaks at high depression which results in poor idle and low throttle opening mixture control. These carbs had very little wear at all, in fact similar tolerance to the new bearings. Reassembly was very straightforward, the biggest challenge being centring the jet, which was a case of ensuring the needle was straight and lining one up against the other. I set the float height too and worked through

the carb ensuring the piston was lightly oiled and free.

Cleanliness and a methodical approach were needed here, but even with the latter I still needed to refer to the reference carb. I had an old set of ram tubes lying around so polished those up. I like the vintage look but not the lack of filtration! I decided to mock the carbs and the exhaust pipes onto the newly painted engine just to see how it looked... Quite pleased! Foot off the gas for now. **GM**



Cleanliness and organisation are essential with carb rebuilds.



Starter received new bearings.





## Ivan Ostroff Contributor

Ivan's now back down to just the two Jags but he's finding plenty to keep him busy bringing his latest bargain XJ40 up to scratch. Wheel refurbishment and a damper replacement were both long overdue.

### MY FLEET



#### 1989 JAGUAR XJ6

ENGINE: 3590cc inline-six  
OWNED SINCE: 2007



#### 1988 JAGUAR XJ40

ENGINE: 3590cc inline-six  
OWNED SINCE: 2015



#### 1982 RMB GENTRY

ENGINE: 1296cc inline-four  
OWNED SINCE: 2012

## To-do list

- List of electrics to deal with on 1988 Sovereign
- Make up that handbrake lever gaiter and lockable luggage compartment on the Gentry.

### THOUGHT OF THE MONTH

Although I expected to have all the outstanding work on the 1988 Sovereign dealt with by now, the longer I work on it the more it seems worth the trouble.



## Two Jags

New owner Steve takes over the ownership of the 4-litre Sovereign.

Sadly, due to space, or rather the lack of it, three Jags was one too many. Therefore the 4.0 Sovereign has now departed for its new home on the Sussex coast. That amazing comfort, serene ride and wonderful extra torque of its AJ6 4-litre six will be sorely missed and there was more than a tinge of sadness as it was driven away by Steve its new owner. I hope he Steve derives as much pleasure owning and driving it as my wife and I have done.

The recently acquired Sovereign 3.6-litre is progressing well and now looks pretty presentable. Its original Jaguar alloys were in the most awful condition due to the lacquer lifting and moisture attacking the aluminium over a long period, so I took the car up

to Pristine Wheels at Woburn Sands. There I was greeted by Parvir who assured me that they could restore the wheels and bring them back to their original splendour.

A week later, I returned to Woburn Sands to collect the car and the wheels were just as the company name suggests, pristine. Parvir was keen to point out that they don't allow any paint or lacquer to get on the reverse side of the rims so that they can always be sure they when the wheels are balanced the weights will adhere properly.

He also told me that during the restoration process, there had been a chemical reaction to a couple of the centre caps so they had replaced them for me, pretty fantastic service. The attention to

detail and quality control at Pristine Wheels makes the outlay more than worthwhile.

The wheels probably look better now than they did when they left the factory and the looks of the car have been totally transformed.

The rear shock absorbers on said Sovereign have now been replaced. Fortunately the underside of the car is in very good condition, therefore, releasing the mounting bolts for the rear coil over shock units was fairly straightforward. Once the units were off the car the springs were compressed, removed from the old shocks and then refitted to the new rear shocks supplied by Jaguar Heritage ([www.jaguarheritage.com](http://www.jaguarheritage.com)).

Apart from maintaining a



The alloy wheels were in a very bad state.



Rear springs are compressed before removing from the old shocks.



“The wheels probably look better now than they did when they left the factory”



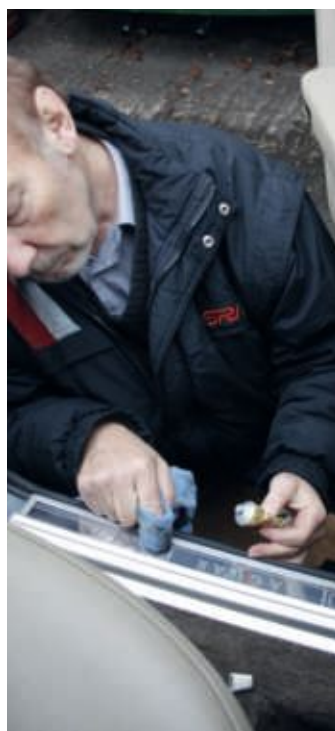
Parvir at Pristine Alloy Wheels made sure they were refurbished perfectly.



New shock in situ after reassembling with rear coil spring.



Astonishingly the original protective film still covered the rear kick plates.



Solvol Autosol returned the Jag's kick plates to their original splendour.

speedy delivery service and competitive prices, Jaguar Heritage provide spares that conform to original specification. Refitting the new units was the reverse procedure to removing; basically straightforward but fiddly, inconvenient, and uncomfortable.

Even though the original Spring Isolator Bushes didn't look too bad, new ones supplied by SNG Barratt ([www.sngbarratt.com](http://www.sngbarratt.com)) were fitted as a matter of course to ensure getting the best results from the complete suspension package shown recently.

Once the wheels were back on I took the car out for a test run. Although the banging had disappeared after the rear A-frame mounts were replaced last month, the shocks were still clonking and the back of the car felt like it was suspended on elastic band.

Now, with the new Jaguar dampers it feels like a totally different vehicle: the ride is well

damped, smooth and totally quiet as it should be.

When I acquired this car I noticed that both of the brightwork rear kick plates appeared to have a blueish hue. On closer inspection I was amazed to discover that the strip of protective plastic film that had been put in place at the factory prior to delivery to the Jaguar dealership almost 28 years ago had never ever been removed.

I peeled the strips away on both sides carefully and discovered that the kick plates were basically undamaged but heavily marked from years of creeping damp.

I was wondering how much a new set of kick plates would cost, when it occurred to me that they are probably no longer available. With those thoughts in mind, I decided to have a quick go with good old Solvol Autosol.

It was the right decision and after thirty minutes of good old fashioned elbow grease all four came up like new.





## Mike Taylor

### Contributor

Mike's Stag Rescue has been a long-term feature in *CM* for the last few years and the project is now finally nearing completion.

### MY CAR



### TRIUMPH STAG

ENGINE: 2997cc V8  
OWNED SINCE: 2004

## To-do list

- Finish off fitting the doors and trim
- Add electric actuators for central locking

### THOUGHT OF THE MONTH

If you have leather seat covers that are to be stored for a length of time, remove them from their packaging and keep them separated.



Door being attached to its hinges using a hydraulic trolley to support the outer edge.

# Trimming out begins

**T**ime to fit the doors, hopefully without causing any damage to the paint. Initial installation was relatively simple as the hinges were correctly located, having been undisturbed since initial door fitting. With the front of the door resting on the hinges and the rear on the hydraulic trolley, the six fixing bolts were screwed into place and two on each hinge were tightened and tested for fit.

Dan came to assist in alignment as there are numerous edges to check when the door closes. We used pieces of card cut from a cereal packet to use as feeler gauges around the door edges and after several minor adjustments, using pencil marks

on the hinge as a guide, we achieved even gaps all round.

Fitting the tonneau panel also required a second set of hands and adjustment was more time-consuming than the doors, primarily due to the hinges requiring some minor adjustment on the rear bulkhead.

The card feeler gauge was used to ensure clearance between the tonneau panel and rear deck as it opened. The rubber seal was then glued in place and the locking catches were cleaned, painted and fitted. I would have preferred to have the catches zinc plated but environmental regulations have resulted in all local zinc platers closing down, so aluminium paint has to suffice.

I was in two minds about whether to replace the two release cables for the tonneau. Although the internal cables on the two I had were reasonable, the outer cables had plastic end fittings that had become brittle and cracked, so a new set was ordered.

When the replacements arrived from Rimmer I was pleased I had made this decision as the new cables had metal screwed connections with plenty of adjustment. The tonneau locks and strikers were then fitted and adjusted enabling tonneau to be locked in place. The old locking pin from the hood rear rail was bent and had been repaired so a replacement had been sourced from Rimmer with the new release cables.



The tonneau panel was attached to its hinges and adjusted for best fit.



The tonneau locks were cleaned and painted and fitted with new operating cables. The new hood striker and refurbished bonnet striker are also shown.



“I discovered that there was a very limited selection of cavitywaxes that could be purchased locally”



The window frames and hardtop locking plates were trial fitted.



Stains from felt marker pen had spoiled the appearance of rear seat squab and cushion.



This is same section of seat cushion after Leather Finishing Products had worked their magic.



Rear seat trial fitted, the gap between the seat squab and tonneau is due to seat not being bolted into place.



The headlights were removed to improve access for spraying Mil-Spec wax into front wing areas.

This was fitted to the hood rail and adjusted for correct operation, which involved moving the hood rail rearwards on its hinges with final adjustments of plunger on the hood rail.

The window frames were slid into the doors and held in place with two screws each to ensure that their alignment was OK, and the re-chromed hardtop locking plates were trial fitted to ensure they located correctly against the tonneau cover and did not interfere with the hood operation.

In part 33 I had explained how I had to virtually rebuild the rear seat cushion frame that had later been sent to Heritage Motor Body Trimmers for fitting the foam and leather cover. During this operation Michael, the owner had phoned requesting that I visit as he had an issue with the covers, which turned out to be unsightly black

marks on the face of both squab and cushion. I had ordered the leather seat covers many years ago and had left them in their original packaging as protection against dirt or damage.

When Michael unwrapped them he found the unsightly marks on the rear seats, Michael explained that the marks were from felt marker that had been used to identify each part on the rear of the leather.

Michael, who completed his apprenticeship at Vanden Plas explained that felt or ballpoint pen should never be used to mark on the underside of leather that will show as over time the ink will bleed through the leather and discolour the face.

The organisation that manufactured these seats had been aware of this and marked on the underside of sections that were to be hidden from view, however due to the time I had left them packaged the ink had

bled through the leather and stained the adjacent leather faces. I spoke to Leather Finishing Products, a local leather refurbishing company who confirmed they could remove the marks. Upon their return all traces of the mark had disappeared and as bonus the supplier agreed to reimburse me for the cost. When I explained the issue to Dan, he said that he had a similar issue with a set of leather MGA seat covers he had purchased. Once again he had left them sitting in their original packaging for several years.


Prior to starting the fitting of internal trim the shell required cavity wax injected into all box sections and other rust-prone areas such as doors and wings.

I discovered that there was a very limited selection of cavity waxes that could be purchased locally. This may be due in part to the popularity of applying fish oil products in place of cavity

wax. In the end I purchased Rustbusters Mil-Spec wax that was sprayed using my old Dinitrol gun that has attachments for accessing difficult areas.

Wax was injected into all box sections and inside wings ensuring that the seam between inner and outer wing received a thick coating. The base of the doors and wings also received the wax treatment, newspaper being used to catch excess material that ran out of the drains, once the wax has dried I will check that wax has not blocked any drain holes.

Next month I will be focusing on finishing the doors by fitting handles, locks, windows and the regulator mechanism.

I will also be attempting to fit electric actuators to the door locks so that the car can be centrally locked using the alarm remote control, which should be fun. 





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# PROJECT XJS



Part eight explains how replacing a set of perished front suspension bushes ended up with a major and very expensive rear brake overhaul.

WORDS AND PHOTOGRAPHY IAIN WAKEFIELD

**Y**ou know how it goes, the car's booked into the garage for what at first looks like a simple job and the guy twirling the spanners calls up and patiently explains how he's found a major problem and what do you want to do about it. This is exactly what happened when our project XJS was in the workshop at Jaguar specialists Just XJS Ltd (07940 998199, www.justxjs.com) in Staffordshire having a set of new upper and lower wishbone bushes fitted. To be fair, what proprietor Andy Harvey doesn't know about these luxury grand tourers probably isn't worth knowing and when booking the car in he warned me that this job often turns into a nightmare as the lower bushes are often seized solid.

When we had the new shocks fitted a few episodes ago, I played safe and ordered a complete set of front suspension bushes and steering joints from David Manners (0121 544 4040, www.davidmannersgroup.co.uk), the parts supplier who's very kindly sponsoring this project. This turned out to be a shrewd move as Andy got in touch and said that as he'd stripped the front suspension down to get the upper wishbones off, it would be false economy to replace the old upper and lower swivels. I'd always had a sneaking feeling all these parts would be required before the final part of

this project and had put all the new bits to sort the job out in the Jag's boot 'just in case'.

With the suspension rebuilt and the front wheels tracked, Andy advised me to invest in a set of new tyres as the fronts had worn really badly on the inside and were almost illegal – ouch, this was getting expensive! Next job was to order a new set of new Pirelli P6000's from classic tyre specialists Longstone Tyres but when Andy moved our XJS out of the workshop prior to getting the new boots sorted out, he noticed an ominous patch of oil on the floor where the car had been standing.

This turned out to be brake fluid and you may recall I mentioned how the master cylinder needed topping up a couple of episodes ago, so there had to be a problem somewhere. With the Jaguar back on the ramp, Andy noticed that one of the rear inboard calipers was slightly wet and diagnosed dodgy piston seals. As safety is paramount when it comes to a car's anchors – and my neck – I asked Andy if he could crack on and sort the problem out. He explained that to fit a new calipers and discs, the quickest way is to remove the rear suspension cage and fit new radius arm bushes at the same time to save any messing around in the future. Here's what was involved.

## To-do list

- Overhaul front suspension
- Fit new rear calipers and discs
- Sort out worn seat bolster

## PARTS LIST

Top wishbone bushes x4	£63.48
Top ball joints x2	£106.80
Bottom ball joints x2	£106.80
Track rod ends x2	£19.92
Anti-roll bar bushes x 8	£17.60
Rear radius arms x2	£132.00
Exchange calipers x2	£175.54
Pair of rear discs	£119.00
Set of rear brake pads	£20.93
Plus new lock nuts etc	





## FRONT SUSPENSION OVERHAUL



**1** First job after the Jaguar was safely up in the air was to remove both front wheels and take a good look at the condition of all the front ball joints. Andy Harvey from Just XJS reckoned it would be much easier to renew both top and bottom swivels while replacing the wishbone bushes.

**2** At some point in the past, our XJS had been fitted with a replacement front beam and Andy was happy with the condition of the lower bushes. This was a good job as the metal sleeves on these can weld themselves to the bolts and the only way to fit a new set of rubbers is to drop the front beam.



**3** No such luck with the top bushes as rust stains on the rubbers showed how any lubricant had long dried up. Although this wouldn't have caused the car to 'tram line' on certain road surfaces, a seized bush combined with sloppy upper and lower swivels would definitely allow the car wander around.



**4** Once the bolts securing the outer legs of the top wishbone to the upper swivel were disconnected, the hub was pulled forward so the large nut on the bottom of the joint could be accessed. Andy says these can sometimes need a bit of carefully applied heat to loosen them if they are seized.



**5** With both arms of the upper wishbone removed, the studs where the metal cores sits was red rusty and needed a good clean up before being coated with a copper based grease prior to the new bushes being fitted. A few minutes spent cleaning all the threads too is also a good idea.



**6** A good squirt of penetrating oil soon had the upper swivel off its mounting on the top of the hub. Be careful not to exert too much force on the flexible brake line and ABS cable when wielding the spanners in this area. Note the not too neatly wired bolts securing the brake caliper to the hub.





**7** Andy didn't have too much trouble removing the old top swivel as all the joints had probably been renewed when the replacement beam was fitted. It always pays to purchase good quality parts as even though all the joints that came off the car looked reasonably new, a couple were in a shocking state for their age.



**8** The replacement bushes split in half and fit inside each side of the wishbone. All the metal cores come pre-lubricated but Andy recommends giving each one an extra coating of copper based grease before fitting. Never force the bushes onto the pins, just clean the shaft carefully and the bush should just slide into place



**9** When the car's on the road, there's a fair amount of weight and steering force being transmitted through both lower swivels. If you look very carefully, there's a small hole in the rubber cover where water and road dirt has got inside and diluted the grease, which over time has destroyed the joint.



**10** According to Andy, the track rod ends didn't really need replacing but as the tracking would need to be sorted once everything was back together he fitted the new set I had bought previously. It only took five minute to swap each one over, probably the fastest part of the whole job.



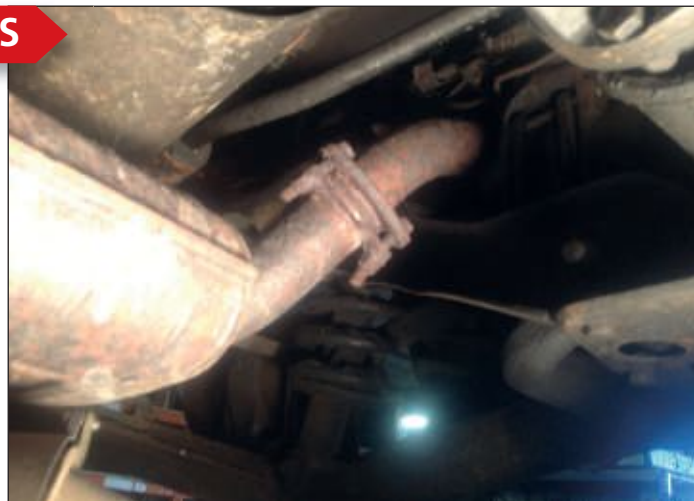
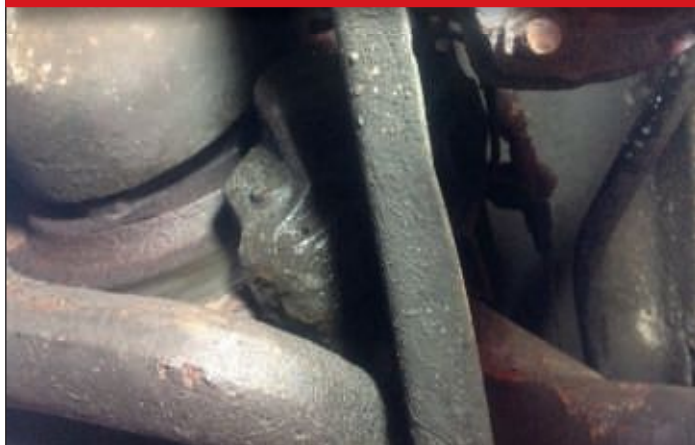
**11** The only other parts Andy didn't replace were the drop links as these were renewed at the last MoT. As the inside edges of both front tyres had worn badly, next stop would be at Longstone Tyres (01302 714072, [www.longstonetyres.co.uk](http://www.longstonetyres.co.uk)) up in Bawtry, near Doncaster to get the Jag fitted with a new set of boots.

**12** It's always interesting to inspect any old parts before consigning them to the scrap bin and it was surprising to see how badly worn some of the suspension components were. Once the Jaguar was back on the ground, Andy sorted out tracking before investigating where the brake fluid had come from.





## REPLACING INBOARD DISCS & CALIPERS



**1** Our XJS has inboard rear discs and the offside caliper was stained with brake fluid. When the new handbrake pads were fitted a couple of months ago, the caliper was bone dry and Andy only found the problem when he discovered a pool of brake fluid under the car after it had been standing in the workshop for a couple of days.

**2** According to Andy, the quickest way to work on the inboard brakes is to drop the rear subframe. To do this the rear part of the exhaust has to come off first and as the flange on the joint just in front of the rear silencer split when the clamp was removed, the cost of a second-hand section was added to the final bill.



**3** Once all the bolts securing the suspension cage to the car were undone and all the cables disconnected, the complete rear assembly was carefully lowered to the ground. Using a wheel-free lift makes this job seem easy and note the large G-clamp securing the heavy assembly to the HGV sized trolley jack.

**4** The points where the rear subframe is fixed to the chassis legs can clearly be seen here. Note the disconnected handbrake cables, flexible hoses and ABS sensors hanging down along with the speedo sensor. This bolts into a special housing in the rear of the differential.



**5** Judging by the scoring on the surface of this disc, the pistons on the wet caliper were obviously not working properly. On closer inspection, all the seals were shot and had probably been cooked when the car was recently driven with the handbrake still firmly applied.

**6** When fitting new discs, it's very important to use new bolts and Nyloc nuts. These can be very difficult to undo and is one of the reasons why Andy likes to drop the rear subframe to do this job. Note the grease nipple on the driveshaft's UJ joint – an unusual feature on car built in the 1990's.





**7** The discs are bolted between the inner end of each driveshaft and the differential. Andy reckons this job can be done at home using trolley jacks to lower the heavy rear cage down to the ground but getting the car high enough in a domestic garage can sometimes be a problem.



**8** More expense! The bushes at the end of each of the radius arms connecting the base of the rear suspension to the chassis had worn badly and as the metal bushes are seated in rubber mountings, the only way round the problem was to order a pair of brand new arms from David Manners.



**9** Andy offers up one of the new radius arms and shows how it will be bolted to the bottom of the suspension once the overhauled rear suspension cage has been refitted to the car.



**10** Our XJS has four rear coil-overs, two on each side, and these had to come off before the new discs could be fitted. Despite looking very work stained, the rear shockers on our car were in pretty good order.



**11** The next job was to fit the new calipers and these are fed over the rear of each disc. Once the caliper and new pads were fitted, Andy bolted on our recently overhauled handbrake assemblies to the top of each caliper and manually took the slack out of the automatic adjusters.



**12** Big thanks to Andy at Just XJS Ltd who managed to pull this massive job in at moment's notice with his sidekick Fred. Reassembly, as it says in all the manuals, is just a reverse of taking everything apart and once the overhauled cage was back on the car, the last job to do was to bleed the brakes.





## REPAIRING A WORN SEAT BOLSTER

This is the final issue of Project XJS and how we tackled the repair to the badly worn side bolster on the driver's seat with one of Furniture Clinic's (0844 879 3691, www.furnitureclinic.co.uk) comprehensive repair kits will be covered in a future step-by-step feature. A new project car feature is due to start in the April issue and will cover the restoration of Lancaster



Over the years a small hole had been worn in the side bolster on the driver's seat of our Jaguar. The rest of the seat is in good order and the refurbished cover will set off the car's very tidy interior. During my time with the XJS, I've grown to like the car's very comfortable half-leather interior.

Insurance's 1969 Mini. Meanwhile, Paul will continue revamping the V8-powered Disco and I've heard on the grapevine that a smart little MGB GT will be joining the fleet now the XJS takes a well earned back seat. However, it's not the end of the road for our Jaguar, as our big cat will still be featured occasionally in our Workshop pages.



Furniture Clinic's comprehensive repair kit includes everything required to patch and then rebuild our damaged leather bolster. Once the hole has been repaired, filled and smoothed, the kit even included a small airbrush to neatly apply thin coats of the final colour.

## NEW BOOTS FOR OUR XJS

Tyres for the 1990s XJS can get a little complicated as some cars could be fitted with a selection of different tyres and wheels.

Generally 1993 and 1994 models were fitted with 235/60ZR15 tyres for which Pirelli offers the P600. Some cars may have 225/65R15 tyres which are not so easy to get but are interchangeable with either a 215/70VR15 or 235/60VR15. The 215/70VR15 tyre size is the tallest of the lot on a 15" wheel and towards the end of XJS production, the car moved to 16" wheels fitted with either 225/60R16 or 225/55R16 tyres.

For advice on selecting some new boots for the time-expired and barely-legal rubber on our car, we approached Longstone Tyres for advice. A leading name in the supply of tyres for classic and vintage cars, it's run by a small team of dedicated enthusiasts who will do their utmost to help fellow old car fans find the best tyres from the enormous range of sizes and

tread designs held in stock at the company's Bawtry HQ. The firm sells tyres from all the world's best classic tyre manufacturers, such as Michelin, Avon, Dunlop, Firestone, BF Goodrich and even stock their own brand of tyres for pre-war cars like the Austin 7.

The company's recent contribution to the classic car movement has been a collaboration with Pirelli reproducing the ground breaking Cinturato range of tyres from the '50s to the '70s which includes a 205/70VR15 tyre to fit Jaguars produced from 1968 to the '90s. The next tyre out of the press in the Cinturato range will be a 215/70V R15 tyre for the V12 XJS. In 1968 the Jaguar XJ6 was the first production car to fit the newfangled low profile radial tyre technology. At this time some cars were still sold with cross-ply tyres and when Jaguar released the XJS in 1975, they used the same radial tyres as the

XJ6 – and the V12 E-type – sized at ER/70VR15. Today these tyres are sized as a more understandable 205/70VR15.

There are plenty of choices for tyres in this size, although the Dunlop that is available today is not actually currently manufactured by Dunlop themselves, but the tyre maintains the original SP Sport Aquajet tread pattern. There are however two top quality tyres in that size made by the world's best tyre manufacturers, the Michelin XWX and the Pirelli Cinturato CN12 for people who just want their car to handle as well as possible. From 1982, V12 versions of the XJ started to use a larger 215/70VR15 tyre. This is an unusual size and was only really fitted to some of the world's most exotic cars such as Ferrari Daytona, Maserati Ghibli and Lamborghini Miura. As none of these models were made in vast numbers, mass production of this tyre wasn't justified, so for the last few



years the only quality tyre in this size has been Michelin's XWX. The good news is that in the near future there will be another choice of top quality tyre made by Pirelli in the Cinturato CN12 HS tread pattern.

Longstone offers a free fitting and balancing service for anyone buying tyres from them and the firm can also offer an on-site fitting service at most VSCC speed events. Longstone takes a wide variety of tyres to these events for participants to see what's available and can fit tyres on site, a service you won't find anywhere else. **CM**





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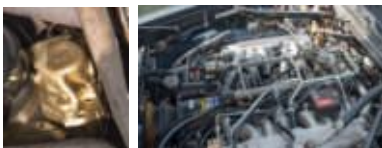
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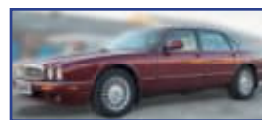
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## OUR CARS LAND ROVER DISCOVERY V8i

# BITING POINT

Part five sees us finishing off the Discovery transmission swap. WORDS PAUL WAGER



**W**e signed off last month with the new gearbox sliding into place after a whole lot of heavy work. That wasn't quite the end of the job though, since on to the end of the gearbox goes the equally heavy transfer box and with that done we still needed to replace all the other bits of suspension and drivetrain which had been removed to allow space for the transmission to slide in and out.

With it all back together, we took the Discovery for a test drive and the news was both good and bad. The new gearbox was perfect as you'd expect and our diagnosis that the original failure was the gearbox rather than the transfer box proved to be correct. But... we did find it tricky to select gears, with the clutch seemingly engaging with the pedal very close to the floor. Moving the floor mat out of the way and adjusting the stop didn't work either, so we clearly needed to look at the clutch mechanism and hydraulics.

A check and bleed of the hydraulic system made a slight difference in the feel of the pedal but didn't do much to move the engagement point, which had us all scratching our heads.

Studying a parts diagram, we found what looked to be the solution: the early Discovery uses an eccentric adjuster at the point where

the pushrod from the clutch master cylinder connects to the pedal shaft, which allows you to adjust the operating length of the pushrod slightly.

We set about the adjuster with a pair of spanners and discovered that the plastic bushes holding the assembly into the pressed steel pedal shaft were almost worn through. Land Rover couldn't supply replacements and neither could a local supplier, so the temporary solution was to visit Avenger 4x4, handily just round the corner from our Peterborough offices.

They didn't have a suitable part on the shelf but with a yard full of Land Rovers they obligingly removed the entire pedal box assembly from a Discovery Tdi after checking that they are indeed the same part and we were able to grab the bushes from this.

A subsequent conversation with project sponsor Britpart revealed that they can in fact supply brand new bushes and so we were able to replace the units in both our own Disco and in our used pedal box which was promptly sold on.

With the bushes replaced and the clutch adjusted, things were much improved and we had it all back together just in time to hitch up one of Ifor Williams' finest and transport our Morris project car to the Bristol Restoration show.

Of course when we went to back up the trailer in the dark we discovered that the reversing lights weren't working. The wiring checks out, so it's likely to be the adjustment on the gearbox switch itself and here you have two choices: either dismantle the centre console to access the switch from above, or grovel under the car trying to find it by feel. Guess which route we chose?

Here's what was involved in finishing off the gearbox swap and getting the Disco mobile again.

### To-do list

- Replace leaky hub seal
- Adjust clutch action
- Replace window rubbers
- Fix minor electrical issues
- Get passenger window working
- Add some security
- Investigate oil smoke
- Upgrade lights and remove lamp bar





## CLUTCH ADJUSTMENT



**1** Here's where we left off last month. With the gearbox bolted up, we could start reassembling it all.

**2** The transfer box simply slides on to the rear of the gearbox and bolts in place. It's a heavy beast though...



**3** ... so the block of wood we used during dismantling was used to support it until the crossmember was bolted back in place. This took some persuasion with a big hammer to get it lined up properly – it's a tight fit between the chassis rails.



**4** The front anti-roll bar was then refitted, along with the two propshafts.



**5** As expected, one of the exhaust manifold studs had sheared off when removing the downpipes and in reality we were surprised to lose only one. The team at ACG dealt with it in short order though by drilling out the stub and tapping the hole.



**6** The car was then back together and running but the clutch wasn't clearing properly. It was biting perilously close to the carpet which made gear selection tricky. First step was to investigate the hydraulics. The reservoir and master cylinder are on the right...



**7** ... and the pipework runs across the engine bay to the left, down the bulkhead...



**8** ... to the slave cylinder on the left of the gearbox.



**9** Here's a better shot of the slave cylinder from below. It's not too hard to access since the Land Rover's height means you can crawl under pretty easily.



**10** Bleeding the clutch is generally a two-man operation since the cap doesn't have a screw thread to attach a pressure bleeder.

**11** With the right kit though you can do it yourself and we had a handy tool in the shape of this Reverse Brake Bleeder supplied by Frost. This allows you to suck the fluid through the system from the bleed nipple and all you have to do is ensure the reservoir doesn't run dry.





# OUR CARS

## LAND ROVER DISCOVERY V8i



**12** Of course it's never that simple and the bleed fitting on the Land Rover slave cylinder is bigger than the average bleed nipple on a regular car. We solved the issue by joining on a fatter piece of tubing.



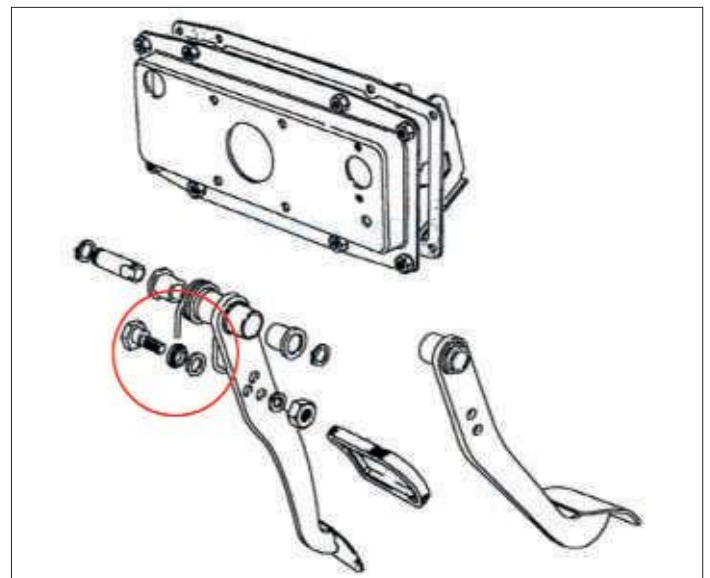
**13** With the device connected up we were able to bleed the system easily, but although it improved the feel of the pedal, it didn't seem to change the bite point noticeably.



**14** Moving inside the car, the first thing to check was the pedal stop, but this was already spot-on, the pedal hitting the stop before the carpet.



**15** On early Discos like ours there's an adjustment at the top of the pedal, where the pushrod from the master cylinder meets the pedal shaft.



**16** Access is tricky to say the least but this diagram shows the arrangement. The bolt (circled) holding the pushrod into the pedal has an eccentric shoulder, so by rotating it the operating length of the pushrod is altered.



**17** After 160,000-odd miles, the bushes where the bolt fits through the pedal were almost worn through, so we first obtained a used pair since local suppliers couldn't help, but Britpart was able to supply a pack of brand new parts.



**18** This close-up of the new parts shows why we couldn't use just any old washers – they're specially shaped with a shoulder to sit inside the pedal.



**19** With the device connected up we were able to bleed the system easily, but although it improved the feel of the pedal, it didn't seem to change the bite point noticeably.

### Parts counter

V5 Reverse Brake Bleeder	<b>£40</b>	Pedal washers	<b>£4.52</b>
--------------------------	------------	---------------	--------------





## REVERSING LIGHTS



**1** Of course it's never simple with a 25-year-old Land Rover and we then discovered the reversing lights didn't work. The cleanest way to adjust the gearbox switch is from above by dismantling the console. First unclip the gearlever gaiters...



**2** ... then unscrew both gearknobs.



**3** Pull off the handbrake handle and remove the gaiter from the console.



**4** This allows the window switches to slide sideways and pop out.



**5** Underneath the switch panel you'll find a hidden third screw which needs removing along with the two at the front of the console tray.



**6** The optional storage box is then lifted away after removing the four screws in its base.



**7** The radio will need to come out too.



**8** We couldn't sleep knowing this many Scotchloks were hidden inside the console, so the soldering iron and heat shrink came out to tidy things up.



**9** In theory the console can now be lifted up after removing the heater control surround...

**10** ... to reveal the access screws on the gearbox cover. On our car though, that trim panel surrounding the heater controls has been stuck in place with Sikaflex, no doubt by the same craftsman who was so generous with the Scotchloks. This means it's definitely been broken and will break again if we try and prise it off so it's back to Avenger 4x4 for a used trim piece before we go any further.



**FINISH**

**NEXT MONTH**

We tackle the harsh-riding suspension.







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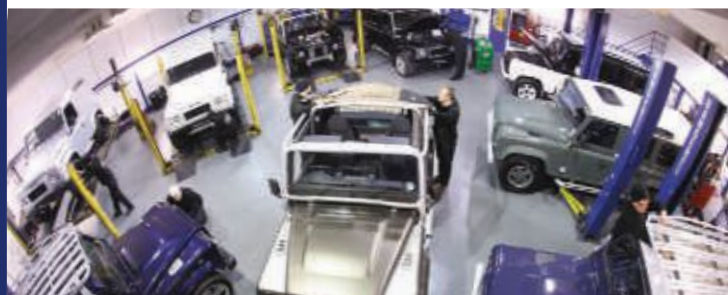
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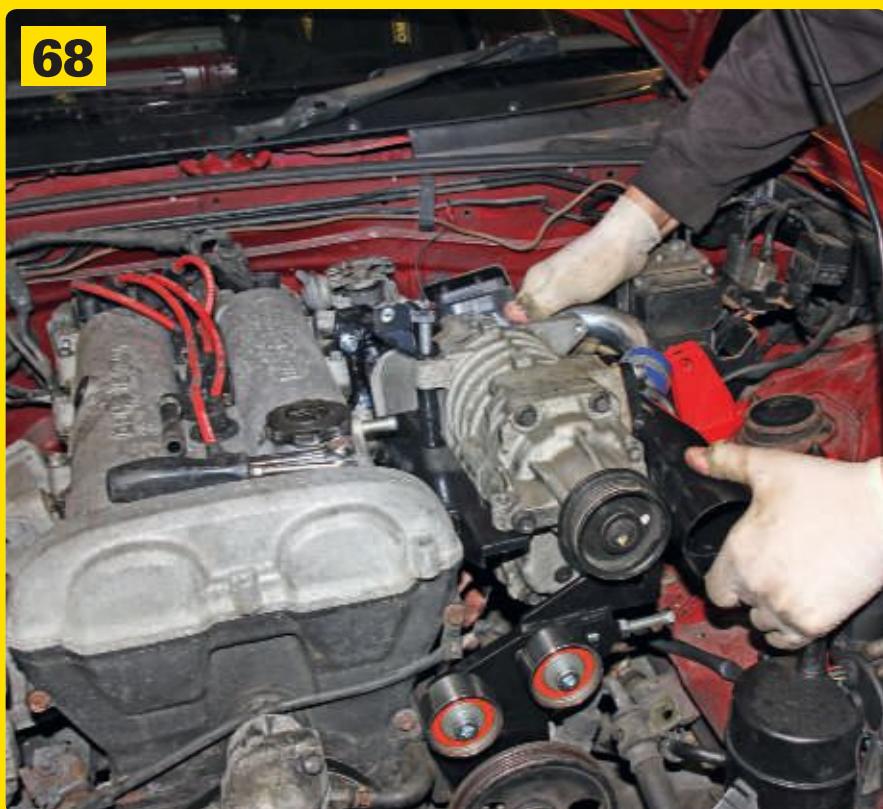


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### 68 Bolt-on superchargers

Help your engine breath more easy by fitting what the Bentley boys once called a blower.

### 76 Handbrake how-to

Stop your classic literally running away and service your handbrake before it's too late.

### 84 Service Bay

We look at the history of the twin-cam engine that powered Lotus well into the 1990's.

76



## HEALTH & SAFETY

### Personal protection

Protect yourself as much as possible when you're working on a car. Always wear gloves to protect your skin from dirt, rust and oil; use steel toe-cap footwear and suitable eye protection. Disconnect the car's battery before you begin. Never get under a vehicle without ensuring it's correctly supported.

### Correct equipment

Refer to workshop manuals for the correct procedures before starting the job, always use the correct tools and ensure you know how to use them. Cheap, low-quality tools can break suddenly.

### Working environment

Be aware of fumes and vapour – especially those from flammable fuels. Make sure you've got the correct type of fire extinguisher to hand and that you can safely get out of the garage in an emergency. Always clear up any spills and rubbish immediately.



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# SUPERCHARGER CONVERSIONS



Supercharging provides the biggest amount of extra power in one big hit, so follow our guide on the various aspects of forced induction and find out how to convert a Mazda MX-5.

WORDS AND PHOTOGRAPHY **ROB HAWKINS**

**F**orced induction, especially supercharging, is a popular means of delivering more air into an engine to increase its performance. The supercharger, or blower, was developed long before the motor car. When the Roots brothers in the USA unsuccessfully designed a bi-rotor gear pump for their water mill, they instead discovered it could pump large volumes of air, which was perfect for feeding a foundry furnace. Their first patented blower was registered in 1860 and they had filed 16 more patents by 1884.

When it comes to fitting a supercharger to an engine, the forced induction helps to deliver more air into it and when this is mixed with fuel, it helps to increase performance. Superchargers are a sort of air pump, and they are usually belt driven, taking their power from the crankshaft. They have long been fitted to a wide range

of cars. The blower Bentley of the twenties is possibly the oldest and best known, but MG was also supercharging cars such as the J2 Midget in the Thirties. And in the '60s and '70s, supercharger conversions were a popular addition to cars as small as the A-series powered Mini. When the MGF was launched in 1995, it wasn't long before specialists such as Stephen Palmer and even MG itself were developing a supercharger conversion for the K-series engine. And the classic car market has long realised that cars ranging from the MGB to the MX-5 can appeal to a wider range of owners if the engine produces more power than standard.

This workshop provides an overview of the components required to supercharge an engine, details on some of the cars we've driven with superchargers fitted and a step by step guide on fitting a supercharger to a Mk1 Mazda MX-5.

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## ENGINE COMPRESSION



The increase in engine performance generated from supercharging does put a greater strain on the internal components, resulting in a shorter lifespan. Many standard engines seem to cope with supercharging, but if you want a serious amount of power, reduce the compression ratio. This can best be achieved by fitting low compression pistons, but the compression ratio can also be reduced through cylinder head machining and an alternative head gasket.

## LUBRICATION AND COOLING



A supercharger needs to be lubricated with oil and this may be contained inside the unit. In some cases, it may have its own oil cooler to help keep the temperature of the oil low and maintain its viscosity.

## DRIVEBELTS



Most superchargers are a belt-driven pump and have a pulley fitted to the front. By mounting the supercharger at the front of the engine, a longer belt from the crankshaft pulley can be used to drive it.

## PULLEYS AND PERFORMANCE



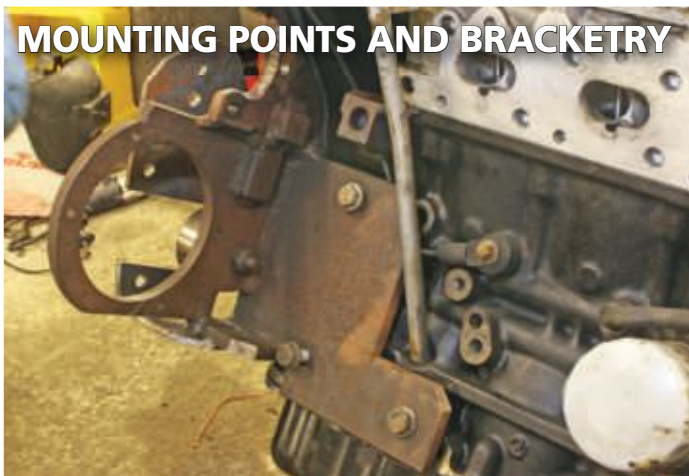
The amount of performance produced by a supercharger is determined by the size of its pulley. Just like the gears on the back wheel of a bicycle, a smaller supercharger pulley will rotate it at a faster speed, which will force more air into the engine.

## CHARGE COOLING



The temperature of the air that's forced into the engine by the supercharger needs to be cool to help optimise its quantity of oxygen. The cooler the air, the denser it is, which means it contains more oxygen that's required for combustion. The air from the supercharger can be fed through an intercooler, which is a large air or water-cooled radiator. This helps to reduce the temperature of the air. The intercooler is often mounted at the front of the car, just like a coolant radiator.

## MOUNTING POINTS AND BRACKETRY



Just like an alternator, power steering pump or anything similar that's belt driven by the engine, the supercharger needs to be solid mounted in position. Mounting brackets can be used to secure it to the side of the engine, ensuring its pulley is correctly positioned and in line with any other pulleys that will share its drivebelt.



## STANDARD SUPERCHARGERS



There are numerous modern and classic cars that are supercharged as standard. For example, there was a supercharged version of the Mk1 Toyota MR2, which is now collectible and expensive. Jaguar returned to supercharging in 1994 with the 322bhp XJ X300 that could accelerate from stationary to 60mph in 5.9 seconds. BMW's first MINI Cooper S was also supercharged and is surely set to become a classic.

## FAILED SUPERCHARGERS



Supercharged mass production cars have sometimes never made it onto the forecourts of the dealerships. The MGF for instance, should have been supercharged to help it compete in the sports car market. Nottinghamshire based dealer Stephen Palmer teamed up with Turbo Technics to produce the Cheetah, a top of the range upgrade complete with bodykit and supercharger. A few cars were converted, but sadly the business folded. Around the same time, MG developed the Super Sports, and the car seen here was launched at the Geneva Motor Show in 1999, but plans to sell 300 cars per year were shelved when BMW took over.

## MGB SUPERCHARGER KIT



The MGB's B-series engine struggles to break into a three-figure sum of bhp in standard tune, but when equipped with a supercharger, it's transformed into a modern day tourer with the ability to overtake and keep up with fast flowing traffic. A conversion kit is available from specialists such as Moss – budget for up to £4000. Some of the MGBs in the USA were powered by a low-compression engine, which is ideal for supercharging, whereas it is still feasible to supercharge a standard compression engine, but it must be in good condition.

## VINTAGE SUPERCHARGING



Supercharging has long been a popular modification. Driving this 1933 J2 Midget with a balanced SOHC 939cc crossflow engine and a Shorrock's supercharger bolted on the side results in an impressive top speed of 80mph and lots of fun on country lanes.

## FILTRATION, FUELLING AND ELECTRONICS



The air that is drawn in by the supercharger needs to be filtered, so a suitable air filter should be fitted. The choice of air filter is often dictated by the amount of space available. The fuelling needs to be updated to cope with the increase in air supply to the engine. This may mean re-jetting and uprating a carburettor, or in the case of fuel injection, fitting larger injectors. Finally, if an engine is controlled by an ECU, this will need to be re-programmed to accommodate the modifications in fuelling and induction.



### SUPERCHARGING THE MX-5: ENGINE BAY PREPARATION



**1** Ewens Sports Cars offers a supercharger conversion kit (mounting brackets and fittings) for the Mk1 and Mk2 Mazda MX-5, which uses a supercharger and bypass valve from the BMW MINI Cooper S (2000-2006), a second throttle body from a 1.6 MX-5, a set of injectors from the RX-8 and a plug-and-play ECU.



**2** The MX-5's standard induction system needs to be removed, including the air filter housing, MAF sensor and the feed pipe. If an intercooler is being fitted, the induction pipework routed to the throttle body also needs removing.



**3** If an intercooler is going to be fitted, then the radiator needs to be drained and removed. There's a drain plug on the base, but remove the engine under tray to access the bottom hose. The radiator is secured with two 12mm bolts.



**4** The supercharger is driven by a belt connected to the power steering pump. The old belt won't be used, so it needs to be removed along with its adjuster assembly, which is secured in position with 12mm and 14mm bolts.



**5** The supercharger is secured to the exhaust manifold side of the engine, so the heatshield needs to be removed, which is secured with several 10mm bolts. Also, the engine lifting eye near here needs to be removed by undoing its 14mm bolt.



**6** The front most mounting lug for the heatshield has to be cut or ground off, otherwise it obstructs the fitting of the supercharger. This is part of the exhaust manifold, so it's easier to remove it in situ, instead of removing the manifold.



**7** The supercharger's mounting bracket is secured to the exhaust manifold stud shown here (second from the front). Clean the thread and apply penetrating fluid before undoing the 14mm nut to reduce the risk of it shearing or winding out the stud.



**8** The mounting bracket for the supercharger can now be fitted, securing it to the exhaust manifold via the stud whose nut was undone in the last step, and the bolt for the engine lifting eye (step 5). Make sure the bracket clears the mount that was ground off in step 6.



**9** A new drivebelt tensioner assembly is supplied in the kit from Ewens Sports Cars, which is fitted to the original mounting points on the engine where the old assembly was located. There are also a couple of pulleys that need to be fitted (tensioner and idler).

### ASSEMBLY



**1** With the MINI Cooper S supercharger on a bench, fit a blanking plate on the end and secure it with four 10mm bolts. This covers the rotating parts of the supercharger, ensuring fingers and debris don't get trapped inside.



**2** An outlet manifold needs to be fitted onto the supercharger to feed air through to the engine. This is included in the kit from Ewens Sports Cars and secured with four 6mm Allen key bolts, fitted with spring and flat washers and a gasket.



**3** Fit a MINI Cooper S bypass valve on top of the outlet manifold with three 4mm Allen key bolts (original MINI bolts). It has its own rubber seal, so doesn't need a gasket. The bypass valve controls the flow of air from the supercharger, especially at idle.



# WORKSHOP SUPERCHARGING



**4** A new inlet manifold (included in the kit) must be secured onto the end of the supercharger with sealant and left to dry for at least 24 hours before the engine is run. The MX-5 1.6 throttle body will be attached to this along with an air filter.



**5** The air control valve on the MX-5 1.6 throttle body needs to be removed (three crosshead screws) and a blanking plate from the kit fitted in its place and secured with the same screws. The throttle position sensor (TPS) also needs to be removed (two 6mm screws).



**6** Before fitting the throttle body onto the supercharger's new inlet manifold, part of its linkage needs to be removed and fitted onto the original throttle body for the car (only applies to 1.8 engines). Undo the 12mm nut that secures the throttle linkage, then remove it.



**7** Use a pillar drill and a 3mm drill bit to carefully drill through the two dowels that secure the short throttle cable guide to the linkage, as shown here. This small piece will be fitted onto the car's original throttle body (already fitted on the 1.6 engine). Reassemble the linkage on the second throttle body.



**8** Fit the modified throttle body from a Mazda MX-5 1.6 onto the inlet manifold with a new gasket, nuts and bolts and two angled brackets between it and the supercharger (all supplied in the kit).



**9** A short length of stainless steel pipe with silicone hoses at each end (supplied in the kit) needs to be fitted between the outlet on the new inlet manifold and the MINI Cooper S bypass valve fitted on the outlet manifold. Secure them with jubilee clips.

## SUPERCHARGING THE MX-5: FITTING THE SUPERCHARGER



**1** After assembling the supercharger with its inlet and outlet manifolds, bypass valve, modified MX-5 1.6 throttle body and external pipework, it's now ready to be fitted over the exhaust side of the engine. Manoeuvre it into position to see how it should be fitted.

**2** The supercharger assembly is secured to the new mounting bracket with two nuts and bolts. It's also secured at the front with a bolt that goes through the new drivebelt tensioner assembly. Progressively tighten all of these bolts.



**3** Fit the new longer drivebelt supplied in the kit and adjust the tensioner until it is tight. Make sure the idler and tensioner pulley's mounting bolts are both tight. The drivebelt will need to be checked and its tensioner may need adjusting again after running the engine.

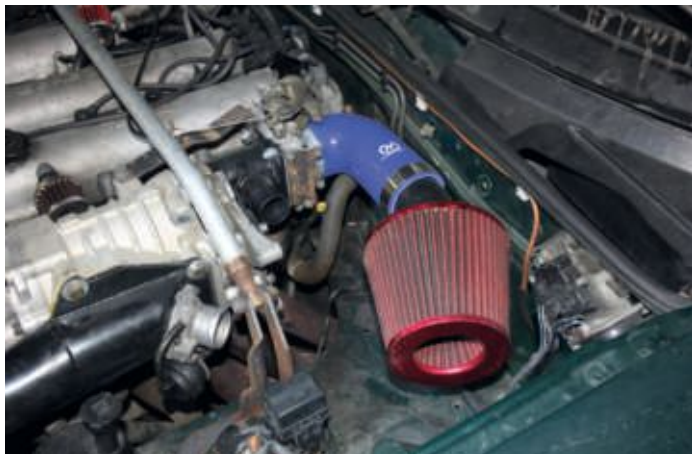
**4** Tack weld the small throttle cable guide to the linkage on the car's original throttle body (only applies to 1.8 engines). This will be used to fit a second throttle cable to the second throttle body. Disconnect the battery before welding.







**5** Use a short bicycle brake cable and sleeving to connect the car's original throttle body linkage to the second throttle body on the supercharger. The mounting bracket for the original accelerator cable (attached to the plenum chamber) will need to be modified.



**6** Some sort of air filtration is required, so depending on the space available, connect a short length of silicone hose to the second throttle body and attach an open cone air filter on the opposite end. If the car has ABS, there will be less space to do this.

## SUPERCHARGING THE MX-5: INTERCOOLER, INJECTORS AND ECU



**1** If you intend to fit an intercooler, the electric fan on the radiator will need to be repositioned to the middle using new mounting brackets supplied in the kit from Ewens Sports Cars. Refit the radiator after fitting the intercooler in the next step.

**2** An intercooler can be fitted inside the front bumper using mounting brackets. Route pipework between it and the car's throttle body and also to the supercharger. If an intercooler is not fitted, reuse the old pipework with a new connection to the supercharger.



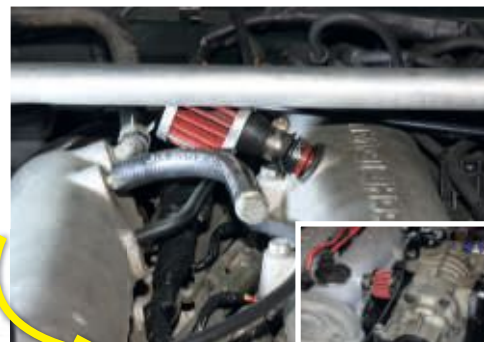
**3** The standard injectors will need to be removed and swapped for larger high impedance ones (360-440cc), such as those fitted to the Mazda RX-8. Undo three 12mm bolts for the fuel rail, then swap over the injectors (use the old seals on the tops). Apply petroleum jelly to the seals.

**4** The breather pipe between the plenum and camshaft cover needs to be modified. Bung the end on the plenum and fit a filter on the cam cover. Fit another filter on the breather connection on the other side of the cam cover.



**5** Some sort of programmable ECU should be fitted to make the most of the supercharger conversion. The MegaSquirt MS2 ECU shown here is a direct plug and play, which can then be fine-tuned.

**6** The MAF sensor isn't required, but if you have an air temperature sensor (Mk2 MX-5), this will need to be fitted into a rubber or silicone section of the induction pipework between the intercooler and the car's throttle body.



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# HANDBRAKE SERVICE



Sick of running yourself over? Find out how to adjust your handbrake and fix common problems.

WORDS AND PHOTOGRAPHY **ROB HAWKINS**

**D**on't trust the handbrake, just leave it in gear, is the advice for many a classic car owner, even for a lightweight car like a Mini. There's no denying the fact that a car's handbrake isn't as efficient as its hydraulic braking system, but that's not to say it cannot be maintained and adjusted to ensure it's as good as it can be.

Most handbrake systems consist of a lever inside the car and cables leading to the rear brakes where either a pair of brake shoes lock a drum or disc, or a brake caliper has a mechanical system to lock the rear brake discs. There are some exceptions, such as Land Rovers that lock the diff and some Citroëns and Alfa Romeos that lock the front brakes. However, the majority of

handbrakes work on the rear brakes.

Maintenance and adjustment can seem like a dark art with disappointing results, and all too often you can run around in circles. Too little adjustment can see you pulling the handbrake lever through the roof to effectively apply the brakes, whereas too much adjustment can result in the handbrake dragging on the brakes, which can cook them and do further damage. And there are lots of potential problems, including seized cables and adjusters, warped drums and pistons that refuse to retract. So the following pages provide an overview of many of the common disasters and how to fix them, along with general advice on routine maintenance.

## Workgauge



**TIME** (Hours)

**0002**

- ☒ Angle grinder with grinding disc
- ☒ Brake cleaner
- ☒ Breathing mask
- ☒ G-clamp
- ☒ Gloves
- ☒ Goggles
- ☒ Grease (light and copper)

**COST** (Pounds)

**0000**

- ☒ Hammer
- ☒ Penetrating fluid
- ☒ Piston wind-back tool
- ☒ Pliers
- ☒ Pry bars
- ☒ Screwdrivers
- ☒ Torch
- ☒ Wire brush

**Warning:** Brake dust can be harmful, especially if you have respiratory problems, so wear a breathing mask and don't leave drinks or food nearby.



### SERVICING HANDBRAKE SHOES



**1** Classic cars ranging from the Mini to the VW Beetle use a handbrake system that works on the rear drum brakes, with access holes through the back plate to the adjusters. Once you've found them, use a screwdriver to turn them and back off the shoes.



**2** Some rear brake drums have an access hole in the face of the drum brake, which usually has to be positioned at 12 o'clock to see the adjuster and back it off with a screwdriver. Spray penetrating fluid inside to help move the adjuster.



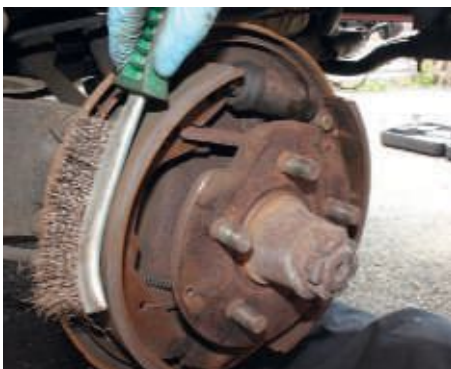
**3** A number of rear disc brakes have a brake drum that's part of the disc and a separate set of handbrake shoes inside. A hole on the face of the drum provides access to the adjuster for the shoes – usually the disc has to be rotated so the hole is at 12 o'clock.



**4** Before attempting to remove a drum or disc, hit the face of it with a hammer to help release it. This also helps to move the brake shoes inside, which may be seized. Don't hit the edges of the drum as it is possible to warp it.



**5** Try to remove the drum by hand. Some handbrakes have self-adjusters, so all you can do is prise off the drum and hit the face with a hammer. Gentle leverage with pry bars and long screwdrivers can also help.



**6** Once the drum or disc and drum have been removed, spray over the brake shoes and mechanism with brake cleaner to dampen any dust, then use a wire brush to clean around the backplate where dirt collects.



**7** The handbrake is usually a mechanical system, so it doesn't use the hydraulic components for the foot brake. However, it's worthwhile peeling back the dust covers on the wheel cylinders to check for leaks.



## SERVICING HANDBRAKE SHOES CONTINUED



**8** Use a flat blade screwdriver to scrape off any dirt that collects against the edges of the braking material on the shoes. Also, inspect the condition of the braking material to see if it's damaged or worn.



**9** If the brake shoes use an adjuster, spray over it with light oil or grease, then wind it in and out using pliers or a flatblade screwdriver. This will help prevent it seizing in the future and make it easier to adjust.



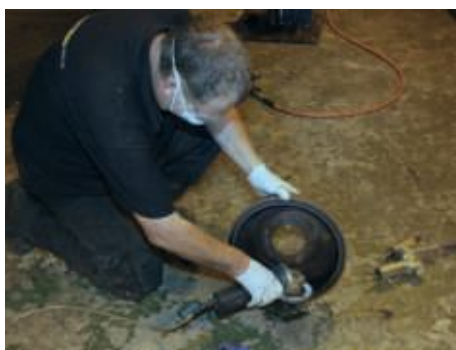
**10** Find the handbrake mechanism behind the brake shoes and make sure this moves freely. Spray over any moving parts with a light grease and operate it to make sure it can move and isn't seized.



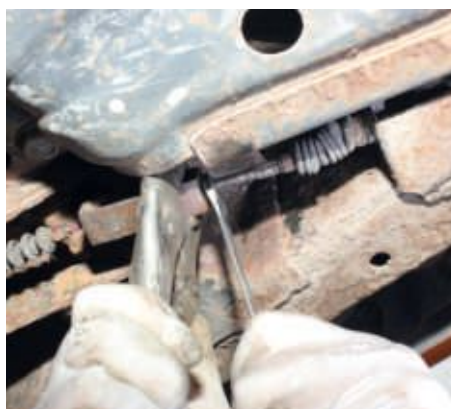
**11** The brake shoes can drag against the back plate, so carefully prise them away with a screwdriver, then spray some light grease where they make contact. Do not apply grease to the braking surface of the shoes.



**12** After cleaning and greasing the handbrake system, the brake shoes may be slightly misaligned, so use a screwdriver against the edge of the back plate and the outer edge of each shoe to ensure there's an even gap all the way around.



**13** Inspect the condition of the inside of the brake drum and renew if it's heavily scored. If there's a lip around the outer edge, this will make the drum difficult to fit and remove, so grind it off with an angle grinder.



**14** Before refitting the brake drum, locate the adjuster for the handbrake cables. This may be under the car or next to the handbrake lever. Make sure this isn't seized. In some cases, back it off so the cables aren't under tension.



**15** Refit the brake drum and adjust it until it locks the drum, then back off the adjuster(s) by at least a quarter of a turn. Take up the slack in the cables (see step 14), then test drive the car and check the drums aren't dragging (they shouldn't be hot).



### RENEWING A HANDBRAKE CALIPER



**1** If a handbrake operates a caliper and it doesn't work, the first step is to make sure the cable is moving. If it is, then the caliper may have seized, so detach the cable from the caliper. It may be secured with a mounting bracket.



**2** Some handbrake cables are secured to the caliper with a clevis pin, which may be seized or damaged, so it will have to be drilled out. Circlips may also be used to secure the cable in position.



**3** Removing the caliper is often the best way to checking whether the handbrake mechanism has seized. Undo the flexi-hose connection, followed by any securing bolts or slider bolts before removing it.



**4** If a caliper cannot be repaired, the best approach is to renew it. This may entail removing any mounting brackets for the handbrake cable. Calipers are often supplied on an exchange basis, so you will have to trade in your old one.



**5** Before fitting the replacement caliper, clean and lubricate any surrounding brake components, such as slider bolts, brake pads and the caliper carrier. There are more of these parts with later single piston brakes.



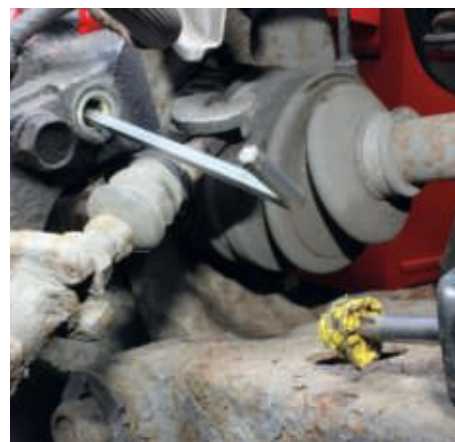
**6** When fitting a new caliper, new discs and pads are not required, providing they are in good condition. And one caliper can be changed without having to do the same on the other side (unlike brake discs and pads).



**7** If copper washers are used to connect the brake flexi-hoses to the caliper, make sure new ones are fitted. Old copper washers will have been crushed, so it's best to fit new ones for a leak-free connection.



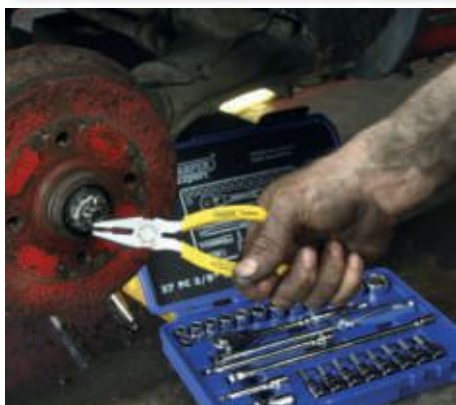
**8** The brakes will need to be bled after renewing a caliper. Finally, the handbrake cable may need to be adjusted. The adjuster may be positioned next to the handbrake lever, or underneath the car.



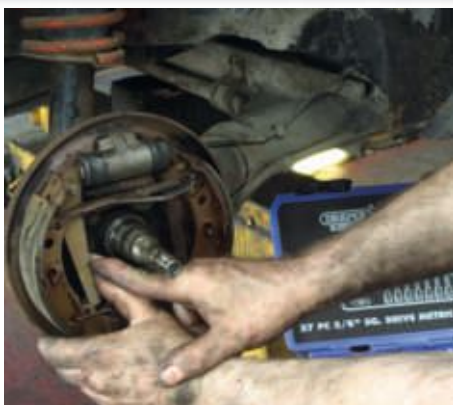
**9** Some brake calipers, such as those on the Mazda MX-5 and some Volvos, have an Allen key in the back that acts as a stop for the piston and adjustment for the handbrake. Don't wind it in too far as the pads will drag.



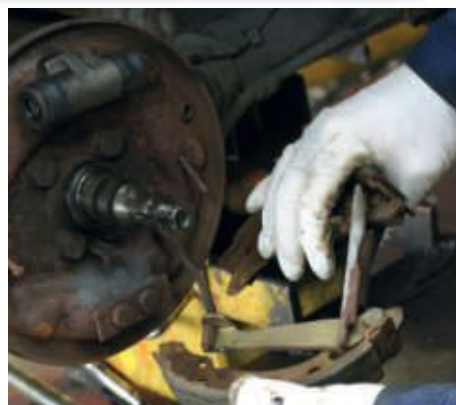
## RENEWING A HANDBRAKE CABLE ON A Mk1 GOLF GTI



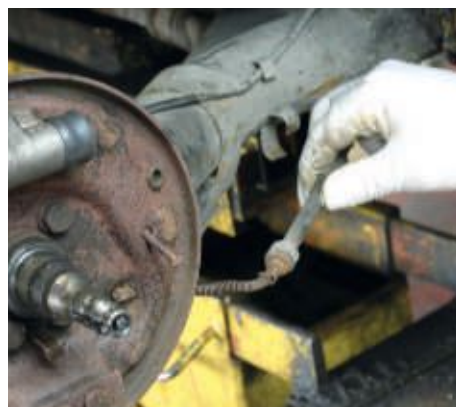
**1** Some drum brakes can only be removed by undoing the hub nut, such as the Mk1 Golf shown here. This involves prising off a hub cap, extracting a split pin and undoing the hub nut before the drum can be removed.



**2** After removing the drum and spraying over the brakes with brake cleaner, the handbrake mechanism can be tested to see if it's working. The large lever shown here is part of the brake shoe and operates the handbrake, but it appears to be seized.



**3** The brake shoes, springs and handbrake mechanism can be removed together. Notice the end of the handbrake cable shown here, which is hooked into the base of the lever that's part of the brake shoe.



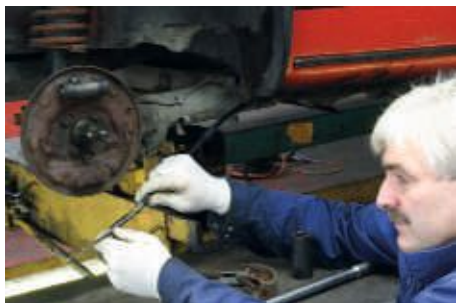
**4** The end of the handbrake cable can be fed out of the back plate and released from any clips that keep it secure to the bodywork or suspension. If the cable is seized, it may be possible to lubricate it here and get it working again.



**5** The opposite end of the handbrake cable is attached at the handbrake lever in this case, but other cars may have a shorter cable attached at an adjuster underneath the car. In all cases, undo any cable connections.



**6** The handbrake cable can now be pulled through and removed from the car. It may be routed through sleeving, which can be difficult if the cable has frayed or corrosion has settled in.



**7** Fitting a new cable involves carefully feeding it through to where it's attached at both ends. In this case, this is at the handbrake lever and the rear brake. Our photograph shows new brake shoes being fitted at the same time.



**8** If a new brake drum needs to be fitted, then a new wheel bearing and seal will also need to be fitted as they are fitted into the drum in this case. The new inner wheel bearing will need to be drifted or pressed into position.



**9** Once the new drum has been fitted, a new outer wheel bearing and seal can then be fitted. Even if the old drum and bearings are being refitted, apply plenty of clean grease. Tighten the hub nut to the recommended torque setting.



## HANDBRAKE ADJUSTMENT

There are usually a couple of ways to adjust a handbrake. The cable often has an adjuster, either close to the lever or underneath the car. If shoes and drums are used to operate the handbrake, then there may also be adjusters for these, which should be adjusted first before adjusting the cable. Some cars, particularly Fords, have a self-adjuster, which is a type of ratchet for the shoes. In some cases, adjustment can be fine-tuned by pressing the foot/brake pedal and operating the handbrake lever up and down several times.



## PUSHING BACK A PISTON

The piston used in a brake caliper may need to be retracted when refitting it to ensure there's space to clear the disc and brake pads. If there are no markings on the face of the piston, then it can usually be retracted by pushing it in with a G-clamp. If there are notches or holes on the face of the piston, then a wind-back tool is required to screw it in. Long nose pliers can be used, but there's a high risk of stabbing your hand when using them to wind a piston in, so invest in a wind-back tool instead. Most pistons can be rotated clockwise to wind them in.

If you have a Mazda MX-5, see step 9 of our guide to renewing handbrake calipers for information on a stop that prevents the piston being pushed into the caliper.



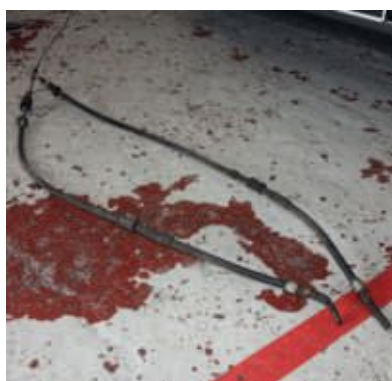
## NEW SHOES



If the braking material on the handbrake shoes is worn, then all of the shoes on both sides of the car should be renewed. Most shoes are secured with a small spring that needs to be compressed to release a locating peg between it and the back plate. Then there are a number of longer springs to remove, which pull the two brake shoes away from the drum. Make a note of how and where these are fitted before removing them. You will also need to detach the handbrake mechanism to renew the brake shoes.

## HANDBRAKE COMPONENTS

Most cars use a mechanical handbrake system, which consists of a lever with a ratchet to ensure it remains in the up position when the handbrake is applied, and one or two cables routed through to the brakes. Typical problems with these parts include seized or broken cables, which are usually fixed by replacing them. The handbrake lever rarely fails, unless the ratchet stops locking the lever. Electrical switch failure is common on some cars (the switch that illuminates the handbrake warning light on the dashboard) and can be found near the base of the handbrake lever.


**FINISH**





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# LOTUS TWIN CAM

The life and times of the engine which powered Lotus into the 1990s.

WORDS ANDREW EVERETT

**M**any engines claim to be the first production four cylinder 16-valve unit: the Dolomite Sprint from 1973 is often claimed as the first, and the Lotus 900 as first seen in the ill-fated Jensen-Healey is another. In fact the Ford Cosworth BDA as fitted to the 1970 Escort RS1600 beat them all to it, but the Lotus 900 is certainly one of the first.

Sadly it had a grim start to life and took a long time to shake off a poor reputation, sending the Jensen-Healey to an early grave although that car had a multitude of other problems to scupper it too.

In the beginning, Lotus had of course the 1558 cc twin cam that was based on the 1500 Ford Cortina block. This was a great

little engine – it had a few niggles but overall it was a tough and powerful unit that powered the Lotus Seven, the Elan, Europa and for Ford, the Lotus Cortina and the Escort Twin Cam.

By 1970 though, the writing was on the wall. The Lotus Cortina ended production in 1970, the Escort Twin Cam was about to be replaced with the RS1600 (although Twin Cam production continued at Halewood until early 1971 to use up remaining units) and the Elan was going to be replaced by a new range of cars that needed a new and bigger range of engines and the 1558 cc unit would never be suitable.

Lotus weren't actually looking for another four-cylinder engine on which to base its new engine but the one that kept cropping

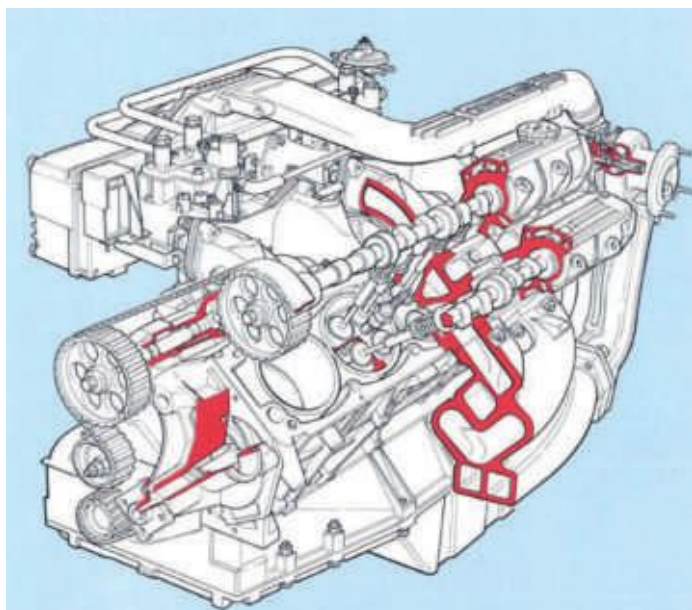
up as a useful development hack was the Vauxhall 1600 and 2000 SOHC slant four. The 1600 Victor's 69.2 mm crank stroke was used in the 2000 Lotus unit and the bore and head bolt spacing is identical. This engine had arrived in 1967 in the all new FD-series Vauxhall Victor and whilst it didn't quite live up to its promise in that car, there was no doubting that the bottom end was immensely strong.

It was in 1966 that Lotus, under engine chief Steve Sanville and designer Ron Burr settled on the type of engine they needed: a 150 bhp four-valve 2-litre unit. Not only that, but even then Colin Chapman was developing ideas for a new generation of Lotus cars beyond the Seven and the Elan.

In fact, Lotus had pretty much settled on the engine design and set about detail design work but at the 1967 Earls Court motor show, Vauxhall launched the new Victor and its all-new engine. Colin Chapman arranged to buy a few engines as the basis for the proposed 16-valve head design. The new engines were to be coded 904 (Vauxhall block race unit), 905 (Vauxhall block road engine), 906 (alloy block race) and 907 (alloy block road). The design was much the same: slanted block with a main bearing 'ladder' on the alloy blocks and twin overhead cams driven by a toothed belt.

In 1968, the first iron block prototype engine ran, and developed 220 bhp. It was called LV220, the LV standing for Lotus Vauxhall and it was used in a





Inside the Lotus engine. This is the turbo version.



First outing for the Lotus Twin Cam was the ill-fated Jensen-Healey.



Type 62 Lotus sports racing car. By 1969, the 147 bhp 905 unit was running in an HB Viva GT test car, and later that year, the alloy block 906 was up and running. However, all was not well - the engine had cost Lotus over half a million pounds and they had no car to fit it to.

### The Jensen-Healey

During the 1968 BMC and Leyland merger, the Austin Healey 3000 had been axed along with the Healey-BMC tie up. One man's loss is another man's gain, and the result was the Jensen-Healey. Jensen wanted a lower priced car to take the pressure off the Interceptor and FF ranges, and Healey was keen to keep sports car production going. Based on HB Viva GT running gear, the

obvious engine would have been the 2-litre Vauxhall unit but if truth be known, it was not a particularly sparkling unit and its ideal home was in the FD Victor it came from.

The VX4/90 units came way too late and Healey needed an engine to buy in from a manufacturer to drop straight into a car on the production line. The answer of course was the new Lotus 907 unit. Chapman approached Jensen and offered 60 engines a week, a number that would have probably satisfied early requirements but Jensen thought it could shift 200 cars a week.

As it turned out, the Healey was nowhere near ready for production... but neither was the 907 engine. By late 1971, production of the Healey and

the 907 began, the two were mated and the fate of Jensen and Healey were sealed.

### Rough start

Put mildly, the early 907 engine was a disaster. It was rough and unrefined (the 1600 BDA was far sweeter, as was the Alfa Romeo 2000 unit), it leaked oil, the oil pump was slow to build up oil pressure from a cold start and because the oil couldn't drain away from the head fast enough, it burned oil as well.

Distortion in the block and liners resulted in pistons partially seizing in the liners and it became obvious that the Jensen-Healey was being used as a development mule for the 907.

The iron block Vauxhall unit may not have been a brilliant

engine, but it was certainly strong and reliable and it's obvious now that the iron block 905 should have been used. The Jensen-Healey had plenty of other problems and whilst the car and the 907 had been pretty much sorted out by 1976, the end of Jensen came that year and that was that.

### 1974 AND THE ELITE

With the Lotus Seven now discontinued, the design sold off and the Elan dropped in 1973, just the Europa was being built until the first Type 75 Elite was built in 1974. This all-new car was based on an Elan style backbone chassis but this car was a definite move upmarket away from the previous kit car image Lotus had.





## CLASSICS MONTHLY FAQ's

### MGF MYTHS

**Q:** I've read a few places that the MGF was cobbled together using Metro bits but I've always understood it was the first all-new MG model since the '60s and was a ground-up design. What's the real story?



**A:** Both are true. Yes, the MGF was an all-new design but the first running prototypes were engineered to use the then-new K-Series engine by the simple expedient of using a Metro engine and subframe turned round and mounted at the rear, with another Metro subframe at the front without an engine. The design was subsequently modified for production but essentially the subframes are very similar to the late Rover Metro which also used the K-Series engine. Incidentally, the development engineers discovered the skittish handling of very early MGF prototypes was down to the Metro's anti-dive front suspension working as a 'pro-lift' geometry when installed backwards at the rear!

### ALLOY E

**Q:** I can't remember which magazine I saw it in but I read a technical piece recently which described the E-Series engine as having an alloy block and head. I thought the block was iron but did BL develop an all-alloy version?



**A:** You're right... the E Series used an iron block and alloy cylinder head in both four and six-cylinder versions.



The 910 was heavily revised for the turbocharged application.



Stylish, wedgy and neatly trimmed, the Elite used the refined version of the 907 and was an immediate success to the point that Lotus could drop the Europa in 1975. With 150 bhp from 2 litres, the Elite went well although it was noted for its comparative lack of low down torque. The Elite was also the first Lotus to use the 907 engine.

The Elite was also joined at launch by the fastback Eclat model, and both cars received a lot of praise from the press due to the astonishing handling and ride although many owners cursed the various build quality problems.

The following year, the Esprit arrived, and even with 150 bhp, this was a genuine rival for both the Porsche 911 and more importantly, the Ferrari 308GT4 and GTB cars. But more power was always going to be needed and so a 2.2-litre version arrived in 1980 to be used in all Lotus cars.

This was arrived at because not only did Lotus need more power, but so did the Lotus Sunbeam that was about to go into production – more of that later. The capacity increase was taken care of with the longer stroke of 76.2 mm from the 2300 Vauxhall engine and to allay any fears over loss of refinement (the 907 had become quite a sweet engine), engineer Tony Rudd added what could be called the first dual-mass

flywheel to absorb vibrations. The new engine was called the 912.

By 1982, the Elite and Eclat had done their job and were replaced by the new Excel. This new car was the fruit of what Lotus learned from Toyota when the two companies collaborated on the revised Supra and it incorporated many Toyota parts such as the gearbox and differential as well as trim parts. The Excel (called the Eclat Excel until the mid Eighties) also used the 2.2-litre 912 engine in largely unmodified form.

In this form, the 912 2.2 engine continued in production until 1987 when the 912S was released for the facelift Esprit - bigger 45DHLA carbs and a higher 10.9:1 compression added up to 175 bhp and very lively performance. The Excel left production in 1992 and the normally aspirated 912-powered Esprit had left production in 1990 due to low demand.

### Forced induction

Ever since the Porsche 911 Turbo and the Saab 99 Turbo had arrived, turbocharging had become fashionable. The first Esprit Turbo arrived in 1980, and it used the new 2.2-litre Type 910 engine. Lotus would have ideally liked to have developed the new V8 engine based on two slant-four units (as GM envisaged with the Vauxhall unit) but it was not to be.





Lotus persisted with carburetors long after injection became popular as this '85 Excel shows.



Based on the new 2.2 unit, the 910 was completely redeveloped. Forged pistons with a deep dish to give a 7.5:1 compression ratio were used along with a modified cylinder head and reprofiled cams. Sodium-filled valves and hardened valve seats were also used as well as an uprated cooling system that incorporated not only a higher-capacity water pump but enlarged coolant passages plus a dry sump system.

The turbocharger used was a Garrett T3 that forced air through a pair of specially sealed Dellorto DHLA 40 carburetors. Power was now 210 bhp at a very high 6500 rpm with 200 lbf.ft of torque. This engine lasted until 1987 when the facelifted Esprit arrived (nearly 30 years ago!) and a new HC model was launched.

The compression was bumped up to 8:1 and the boost wound up to 9.5 psi plus 45 mm carburetors to blow through. The turbo was also modified with a smaller turbine for faster spool up speed and the cylinder head modified with larger ports, whilst reliability was improved with better oil and water cooling. The result was just 5 bhp extra, but torque was now 220 lbf.ft.

In 1986, Lotus was bought out by General Motors and whilst the main project was the development of the new FWD Lotus Elan, development of the Esprit would continue.

The Esprit Turbo had already lost the carburetors and US-market cars gained a Bosch K-Jetronic fuel injection system, but now a better AC Delco electronic multi-point injection system was available. So equipped, the Esprit Turbo SE arrived in 1989 with a whopping 264 bhp from a previous 215 bhp. This huge leap in power came from not only a modern injection system, but also a big intercooler and whilst it gave 264 bhp, up to 280 bhp was available on overboost. Reliability was improved with chrome plated piston crowns.

With a 4.7 second 0-60 time and 160 mph, the Esprit Turbo was now in the big league. An Esprit S with 228 bhp was also available, but like the normally aspirated car, it wasn't a big success.

1992 saw the limited edition Sport 300 Esprit, which as the name implies, had an almost ridiculous 302 bhp from 2.2 litres. This was mainly down to a bigger T4 turbo and a larger intercooler as well as bigger valves and a well ported cylinder head. The result was 302 bhp at 6400 rpm, 287 lbf.ft of torque and it was now a 4.4 second to 60 mph car. Not long after this, the Esprit was revised as the S4 and engine was given new stronger head, block and sump castings whilst a 1973cc 2-litre version was built for Italian and Portuguese markets to slip in under the 2-litre tax break.

### CLASSICS MONTHLY FAQ's

#### V4 CONFUSION

**Q:** Is the Ford V4 engine regarded as a 'Cologne' or an 'Essex' design or do those distinctions only apply to the V6 engines?



**A:** It's both. Hard to believe in this era of rationalisation but Ford allowed both its German and UK subsidiaries to design different V4 engines at more or less the same time. The German one appeared in 1962 and is regarded as the 'Cologne' version. It was used in Taunus, Capri, Transit, Consul/Granada and the Saab 95/96. The UK version arrived in 1965 with the Mk1 Transit and as a result is referred to as an 'Essex' unit. It was found in the Transit, Corsair, Consul, Capri, Zephyr 4 and the Marcos. The engines are quite different in design.

#### SIX-POT METRO

**Q:** Is it true that MG toyed with a six-cylinder MG Metro? A three-pot I could understand but how did they find room for six?



**A:** Yup, it's true and we've seen the prototype which is available to view in the new Collections Centre at the Gaydon museum. The engine was based on the '9X' unit which was designed by Issigonis to power a modernised Mini as early as the '60s. The idea was never taken to production but Issigonis continued tinkering with it and the culmination was a six-cylinder unit which was tried in a 1986 MG Metro, running on twin SU's. It was a modular design with a belt-driven overhead cam.





## CLASSICS MONTHLY FAQ's

### XJS STOPPERS

**Q:** Does the XJS have inboard or outboard rear brakes? I'm looking to buy a facelift 4-litre and I've been told the cars with outboard brakes are cheaper to maintain.



**A:** At launch, the XJ-S was fitted with inboard disc brakes and yes, they can be a pain when they seize – which happens all too frequently as the rear brakes are hard to access and maintenance gets skimped as a result. The 4-litre engine was introduced in 1989 and the move to XJ40-style outboard brakes came with the facelift in 1993. These cars can be identified by the colour-coded bumpers. Our own project XS is a 1992 4-litre but uses inboard rear calipers. It's the later XJS models which generally command the higher values though so you'll find that the cars with conventional rear brakes are often more costly to buy in the first place which of course offsets the advantage somewhat. Our advice would be to buy on condition and not get too hung up on the brakes.

### MIDGET OR SPIT?

**Q:** I'm looking at getting a restoration project and I'm torn between a pre rubber bumper Midget and a Spitfire Mk3. Which is best for the home restorer?



**A:** The Spitfire has the advantage of the separate body and chassis which means you can remove the body and send it off for rust repair while you work on the chassis at home. We've even met people who have suspended the body from the garage roof while they work on the chassis separately. On the other hand, the Midget really is small enough to work on in even a single garage but its bodyshell is more complex for the home restorer. Go for the Spitfire and follow the example set by Chris Hart in this very issue.

## WHAT ENGINES FITTED WHAT CARS?

### 2.0 (1973 cc, 95.28 mm bore, 69.24 mm stroke)

907 Jensen Healey, Lotus Elite, Eclat, Esprit S1 and S2 1972-1980, 145-155 bhp.  
920: Esprit 2.0 Turbo 1996-1999, 240 bhp.

### 2.2 (2174 cc, 95.28 mm bore, 76.2 mm stroke)

911 Talbot Lotus Sunbeam 1979-1982 150 bhp.  
912 Lotus Esprit S2, S3, Eclat, Excel 160 bhp  
910 Lotus Esprit Turbo 1980-1990, Esprit SE, Sport 300, Esprit S4 and S4S 215-300 bhp

## Chevette HS: the Lotus that wasn't



In 1978, Vauxhall launched the Chevette HS with a 2.3-litre 16-valve slant four engine. It was thought that this was a Lotus 900 engine but it wasn't – in fact it was a Vauxhall 16-valve development of the 2300 Victor engine with an iron block that developed 135 bhp. Because the Lotus head fits the Vauxhall block, Vauxhall's rally team were sometimes forced to use Lotus heads on their rally cars due to a shortage of the Vauxhall unit and Chevette HS cars were withdrawn from the 1978 Portuguese rally after protests from other competitors.

## The Lotus Sunbeam

Anyone who grew up in the 1970s can't fail to remember watching *World of Sport* and the Ford Escorts winning just about every major UK and world rally. Chrysler UK wanted a slice of that action, as did BL and Vauxhall.

Chrysler UK already had the Avenger-based Sunbeam hatchback, and had launched a twin carburettor 1600cc Ti version with what was basically Avenger Tiger running gear and engine.

Chrysler (soon to become Talbot) wanted to go one further and produce a serious competition version that would end Ford's dominance and the Talbot Sunbeam Lotus was the result. Launched in 1979 but not available to buy as a road car until 1980, the new car was developed by Lotus and it's rumoured that even Colin Chapman found the car a bit hairy.

With a standard 150 bhp 911 engine developed from the 912 with a 9.4:1 compression ratio, five-speed ZF gearbox and special axle, suspension and brakes, the Sunbeam Lotus was a formidable road car and in 1981, won the world rally championship before production ended in 1982 after 2308 cars were built.

## 1999: The end

By 1996 Lotus was finally ready to launch the Esprit V8. The Excel had long gone and the front-drive Elan was in full production so with the last 2.2 Esprit Turbo went the majority of 900 engine production. Over the course of 27 years, the 900 had developed from an unreliable disaster into a very good engine. Many rate the final non-turbo 175 bhp units as being a particular high note although you can't ignore the Turbo's power figures. Whilst 2.2 Turbo production ended in 1996, the 920 2-litre turbo continued until 1999.





Eclat used the 2-litre 907 engine.



Later turbo versions of the 912 engine were good for up to 300 bhp.



### Strengths and weaknesses

The early engines had the problems mentioned earlier but by the time the Elite arrived, most of these had been ironed out. Early engines that are in trouble can be rebuilt, but a later engine is probably a better bet.

The 2.2 was much better and a well-maintained example is extremely tough and reliable, thoroughly disproving the old 'Lots Of Trouble, Usually Serious' joke. A regular photographer for this very magazine ran not one but two Excel 2.2s – he is notoriously hard on his cars and neither Lotus had any major issues.

The timing belt should be replaced every 25,000 miles, the oil and filter every 6000 with a good semi-synthetic, the ignition and carburation properly set up and the coolant changed annually. Do this, warm the engine slowly and it'll do 100,000 miles upwards with ease. Head

gaskets can go and the valves can burn out if the valve clearances aren't checked and adjusted but maintenance really is the key.

The Turbo engines are more highly stressed but a well-maintained unit should be OK. Expect no more than 100,000 miles between rebuilds because it's a small capacity, big power engine but the best maintained cars can see 150,000 miles although they're pretty tired by then.

The cooling system must be in proper order including the electric fan, because overheating one if these is a bad idea as the liners can sink in the block, making rectification into an engine rebuild. Check the coolant levels regularly and replace the fuel hoses every 3-4 years.

New T3 turbos are pretty cheap as well. We've have seen them for as little as £300 and several specialists can rebuild your originals. **GM**

### CLASSICS MONTHLY FAQ's

#### P38A PRAISE

**Q:** Does the Range Rover P38a model use the old Rover V8 engine or the BMW unit? I know the diesel is a BMW engine. And are they the money pit everyone says? I quite fancy one and they're certainly cheap now!



**A:** The P38a uses the Rover engine, uprated to 4.6 litres. BMW petrol engines weren't used until the later L322 model. A well sorted P38a can be a reliable proposition and Range Rover specialists know all the tricks to sorting out the well known issues. Key to it is fixing any small faults as soon as they arise rather than leaving them to become expensive problems... especially where the air suspension is involved. Go for a petrol as the diesel isn't really up to the job and can get expensive when the injection goes wrong.

#### LIMITED PALETTE

**Q:** Is it true that the Series 2 Jaguar XJ6 was only available in four different colours? I've heard it from a few sources but can't quite believe it really happened.



**A:** Yes... and no. In theory a full range of colours was on offer but in the late '70s and early '80s a new paint facility installed by BL at the Castle Bromwich plant caused all sorts of problems. The system achieved a high gloss by applying the paint at very high temperature and for a while just four colours could be reliably applied: Cotswold Yellow, Regency Red, Royal Blue and White. This was rapidly rectified when Sir John Egan took control at Jaguar and his book *Saving Jaguar* is a fascinating read for anyone interested in the modern history of the iconic brand.



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## TOOLED UP: GET PREPARED

Still using your classic in the depths of winter? Then you'll find some last-minute additions to the gift list here.

WORDS MIDGE BURR

### Osram Night Breaker Unlimited Bulbs, From £12



Osram have been manufacturing light bulbs since 1908 so it's pretty safe to say they know what they're doing when it comes to leading the way. Nowadays their famous Night Breaker Unlimited range contains some of the most powerful halogen items in the world, all painstakingly-engineered to emit a whopping 110 per cent more light than standard bulbs. These also boast 20 per cent whiter light, a 40-metre longer beam and, unlike quite a few out there, come in at reasonable money. Not that you can put a price on seeing where you're going of course.

[www.nightbreakerunlimited.co.uk](http://www.nightbreakerunlimited.co.uk)

### Alcar Stahlrad Steel Wheels, From £36



There's no getting away from it, alloy wheels, especially those specialist 3-piece jobs, are expensive. But what's far worse is that all the road salt and grime in winter causes corrosion and damage to their finish quicker than you might think – and that's not exactly good for their structural integrity. It's also estimated that there are an extra 250,000 accidents every year in the UK as a direct result of the winter weather and wheels are the by far the most commonly damaged item.

Besides, these direct replacement steel wheels have to be an easier solution than an intensive wheel cleaning regime. They're absolutely perfect for fitting winter tyres for better cold-weather handling too.

Manufactured by the biggest wheel maker in Europe, they're available in sizes from 13 to 17-inches and are built to exact OEM specifications taking into account every small detail right down to brake caliper profiles and clearances. Steel wheels are a popular winter addition to modern cars on the continent, and it's easy to see why.

[www.wheelwright.co.uk](http://www.wheelwright.co.uk)

### AutoSock Snow Socks, From £50



Here in the UK we don't have a lot of major snowstorms but, when we do, we already know that everything just stops. Don't get caught out on even the mildest icy slopes when you could have a set of these in the boot. If it's really coming down hard they could be something of a life-saver.

Manufactured in Norway, unlike traditional snow chains these re-useable TÜV-approved socks are designed specifically not to damage your wheels or tyres. Because of their hairy fabric drive-surface they use dry friction to give plenty of added traction, sticking to ice and snow in the same way as a pair of woolly gloves. In the short term these can be even more effective than winter tyres too. Simple, effective and much cheaper than a 4x4.

[www.autosockdirect.co.uk](http://www.autosockdirect.co.uk)

### Rain-X Rain Repellent, £10

Even if it doesn't snow in the next few months you can bet your Christmas Turkey the rain will be coming down; it is the UK after all. Rain-X has been around for 40 years now and it still does an amazing job of beading



water, frost, ice and salt straight off your windscreen. One quick treatment of this water-repellent formula is all you need to dramatically improve wet weather visibility and driving response time, especially at motorway speeds. It also helps to remove frost, mud and bugs quickly and easily. Remember being able to see clearly while driving comes in quite handy, and not just in winter.

[www.rainx.co.uk](http://www.rainx.co.uk)

### Alphaline Batteries, From £36

The best form of protection is always prevention – and that goes double for electrical systems in winter. Cold



weather is devastating to conventional lead-acid car batteries so it makes sense that this time of year is when they're most likely to go wrong. Replacing your battery now with a high performance, high-cranking sealed unit from Alphaline will solve all these inevitable problems before they even happen. For the price, these are easily the best zero-maintenance AGM batteries on the market.

[www.batterymegastore.co.uk](http://www.batterymegastore.co.uk)

### AirMan ResQ, £38



If you get a puncture in the middle of winter messing around with a jack and wheel brace is much less appealing than having one of these German-engineered marvels on hand to sort you out.

Recommended by plenty of car manufacturers this two piece system from AirMan contains an exclusive 'valve-through' sealant that uses particle gel technology to repair punctures of up to 6mm in diameter, in temperatures as low as -20°C. It also contains a compressor that will inflate your tyre in under six minutes, getting you back on the road as quickly, safely and frostbite free as possible.

[www.airman-uk.com](http://www.airman-uk.com)



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# WINTER GEAR

## Tools and products

### Sealey Schumacher 15 Amp Battery Charger, £94



This fully automatic, microprocessor controlled box of tricks not only does a mean job of charging 6 or 12 Volt batteries (including conventional lead-acid AGM/Gel, Leisure and stop/start units) but what's particularly useful in winter is it can also be used as a trickle charger to maintain an unused battery over long periods of time. That said, the main selling point will always be that it's fast.

By incorporating patented speed charge technology this clever bit of kit actively monitors and constantly modifies its output to charge batteries up to three times quicker than conventional chargers. There's no need to leave those batteries charging overnight anymore – this'll have you up and running in no time.

[www.sealey.co.uk](http://www.sealey.co.uk)

### Prestone Fluids, From £2

The world leaders in winter protection



products at Prestone have been doing their thing for over 80 years now and it shows. In fact, independent testing has shown that everything from their de-icer and anti-freeze to their award-winning screen wash seriously outperforms just about everyone else on the market. The results, as they say, don't lie.

[www.prestone.uk.com](http://www.prestone.uk.com)

### Yokohama W.drive Winter Tyres, From £56

It might not be law in the UK to switch to



winter tyres just yet but that doesn't mean they're not infinitely useful. For a start (and perhaps most importantly) they offer far better grip than normal rubber in temperatures under 7°C.

Where summer tyres harden and suffer from reduced performance in cold conditions, winter compounds will stay pliant offering up to 10 per cent shorter stopping distances and vastly improved cornering. They also have more wet weather-focused tread patterns helping to clear water, snow and ice. So, obviously, they're much safer when temperatures plummet.

Most winter tyres come in very limited OEM sizes too so it's nice to see the W.drive range from Yokohama listing plenty for the more fruity wider applications. Just the job for modifiers everywhere.

[www.yokohama.co.uk](http://www.yokohama.co.uk)

### Bluecol 3 in 1 De-Icer, £3

British brand Bluecol has been famous for its anti-freeze products since the 1930s with many prestigious manufacturers choosing Prestone for their OEM-fill applications. There's nothing quite so old school about this thoroughly 21st Century product though; it's clearly the next generation of windscreen de-icer because it also contains a whole collection of tough cleaning agents along with a rather uncompromising rain repellent. Specially developed by some thoroughly scientific men in white coats, this formula effortlessly removes dirt, grease and finger marks leaving behind an invisible coating to make your screen simply bead off rain, sleet and snow. Oh yes and it also de-ices too.

[www.bluecol.co.uk](http://www.bluecol.co.uk)



### Silverline Rechargeable Site Light, £29

As it seems to get dark around lunchtime at this time of year, an LED work light like this could prove to be the most essential thing you buy this winter. With a high 700 Lumens output and both 240V and 12V chargers included, this new product from Silverline is certainly a handy item to keep in your car for all those little motoring emergencies. It comes with an added bonus too – a USB output for charging all your new-fangled mobile devices. That's some seriously good value for money right there.

[www.silverlinetools.com](http://www.silverlinetools.com)



### SmartBox Mini Jump Pack, £70



This spectacularly tiny item is only about the size of an iPhone but it packs a serious punch – enough punch to jump start a car with a 3.5-litre engine. The tiny 400-amp starter can also be used multiple times on a single charge, comes with a built in torch, will breathe life into your mobile devices via USB and can even be used to power a portable fridge. Did I mention it's tiny too? Amazing.

[www.smartbox.uk.com](http://www.smartbox.uk.com)

### Dodo Juice Future Armour, From £4 (100ml)

Paintwork preservation measures are an absolute must in winter and, although a wax will do the job of providing a sacrificial layer of protection, a paint sealant is arguably a better option because they tend to be more hardwearing and engineered to repel grime on a molecular level. This new sealant from Dodo Juice offers up to 4-months protection and is also about as cost-effective as it gets – you should be able to treat your whole car for around a pound's worth. The best thing though is it has to be the quickest and easiest to use nano sealant on the market. Just spray on, wipe off and you're indoors with a cuppa before you know it.

[www.dodojuice.com](http://www.dodojuice.com)



### Auto Finesse Rag Top Cleaner and Protector, from £10

Most people fail to realise that fabric roofs have to be properly maintained, especially during the cold season. It's no good just giving them a once over with car shampoo either because heavy particles like dust and dirt will still get ingrained in the fabric acting like sandpaper tearing up the fibres and essentially degrading the integrity of the whole roof. This duo of products is a simple solution for lifting out stubborn grime from the fabric and adding a dirt repellent barrier layer.

[www.autofinesse.co.uk](http://www.autofinesse.co.uk)







# THE FORD CORTINA MKII & 1600E OWNERS' CLUB LIMITED



The Club was established and run in 1976 for local enthusiasts by Richard Southern and the late John Danvers in the Manchester and Leicester areas. During the following twelve months it became increasingly apparent, from the countrywide enquiries, that some form of National Club was required. In the summer of 1977 the Club was reorganized into its present form. In 2003, because of the success of the Club's Spares Scheme, the Committee decided that, for the protection of the Membership as a whole, the Club should be incorporated as a Company and limited by guarantee.



Membership of the Club reached a peak of around 1500, but this number fluctuates to around 450 or 500 at the moment. Members come from not only the United Kingdom but other parts of the world too, including Eire, Malta, Cyprus, U.S.A., Australia, France and Spain, to name but a few. **Joining the Club:** If you wish to join the Club please complete the 2 Application for Membership forms available from our website [www.mk2cortina-1600e.co.uk](http://www.mk2cortina-1600e.co.uk) and return them to the Membership Secretary with your subscription.

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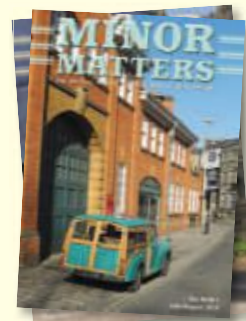
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# CM: The best of 2015

**T**his issue may bear the February cover date but as we send it to press right at the tail end of the year with the party season beckoning, it seems like an opportune time to look back on the last 12 months. It's been the first full year of *Classics Monthly* under new owners Kelsey Media and hopefully if you're still reading then you like the changes we've made so far.

As far as restorations go, we've had everything from pre-war cars to '90s saloons and pretty much everything in between, something

which has reinforced the commonly-held belief that it's almost impossible to pin down our hobby sufficiently to answer the old chestnut "So what's a classic car then?"

Here then are our picks of the restorations we've covered over the past year... plus of course, our very own Traveller project which finally met its new owner at the NEC show. We'll see you next year – and if you have a project which you reckon stands comparison with our 2015 favourites then email us at [cm.ed@kelsey.co.uk](mailto:cm.ed@kelsey.co.uk).



## **1970 Ginetta G15** JANUARY

Brightening up the winter gloom back in our January issue was Andy Hill's striking Ford Electric Orange Ginetta. Using Hillman Imp power, the G15 was a well regarded car and Andy had always wanted one since being into Imps when he first started driving. It took him

30 years to find a Ginetta in a neighbouring front garden and his contacts in the motor trade came in handy for the rebuild.

The work involved rebuilding the chassis and tidying up damage to the fibreglass bodyshell before marrying the two together and slotting in a tuned engine good for 110bhp at a heady 7500rpm.





### 1961 Brabham Sprite

FEBRUARY

Hot on the heels of Andy's quick little G15 came Paul Webb's MkII Sprite... packing not the usual tuned A-Series but a Coventry Climax engine very similar to that used in the Ginetta.

The story begins with Brabham (yes, the Grand Prix team) which offered a Climax conversion for the Midget and Sprite back in the day but with the original Brabham-converted cars being hard to find today, Paul decided to build his own. Take one tired Sprite, add the 1460cc fire pump development of the lightweight Climax engine and you have a recipe for something really inspiring.

The car was built with reference to an original Brabham converted Sprite and with suitably uprated suspension and brakes the car is an ideal illustration of what might have been: BMC could so easily have offered something like this as a factory car.



### 1971 Triumph Spitfire 2.5 PI

MARCH

Another car they could so easily have made was a GT6 running the larger 2.5-litre Lucas-injected version of the Triumph six-cylinder engine in place of the 2-litre. The six-pot motor was never even offered in the Spitfire either, but we found a man who had combined both to good effect.

Mike Blowing bought his Spitfire already converted to 2.5 power but proceeded to re-engineer much of the work to his own standards, something which culminated in an engine rebuild. At this point Mike took the opportunity to uprate the engine to the tune of 170 bhp which in the lightweight Spitfire shell created a quick little car.



### 1967 Morris Minor

APRIL

John Tewkesbury's Minor appeared on the front cover of our April issue and remained a favourite for many reasons. For a start, it shows just how well the Minor can be uprated these days, with Charles Ware adding modern seats and seatbelts, a



five-speed gearbox conversion and 1275cc engine during the rebuild. The other reason for John and his Minor sticking in the memory is that when the car was complete he happily hopped into it and drove it home... all the way through France and Spain down to Gibraltar, where the soft-top Moggy lives a life in the Mediterranean sun.



### 1959 Frogeye Sprite

MAY

Andrew Evans bought his Sprite ready-imported from the USA and since it had spent most of its life in California, he felt it would hopefully hide fewer surprises than a British car... although the two Black Widow spiders which made the journey with the car weren't something he expected to encounter.

Since the car had been altered by its previous owners, Andrew elected to paint it not in its factory white but in the red it had worn for most of its life, while the 948cc original was replaced with a 1275cc Midget engine and the brakes uprated to suit.





### 1959 Austin A35

SPRING

If you've spotted a tidy looking A35 van in Lincolnshire signwritten for a tarpaulin business then you've spotted Ian Baumber at the wheel of this example which was rebuilt by Sherwood Restorations. Known for the high standard of the cars they sell and restore, Sherwood lavished more care and attention on the A35 than these fun little cars usually get treated to and the firm's Charles Smalley admitted it was something of a labour of love.

Acquired as a part-finished project, the A35's bodywork had largely been sorted out, so Sherwood tidied it up and laid down the County Cream paintwork before trimming it in original style but slightly less spartan than its original cab. The result must be one of the best A35s in the country.



### 1971 Wolseley 1300

JUNE

With less than 100 examples left, the Wolseley-badged incarnation of the ADO16 is a rare car but their relatively low values mean that these cars don't tend to get lavishly restored.

Colin Brigg paid just £75 for this car after searching for an example like the one his mother drove when he was a child. Although it was mostly sound, the car had been involved in a minor bump which meant a hunt for the correct front end. Eventually a Wolseley front panel was fabricated to solve the problem and other new panels included a pair of wings, while the subframes and suspension also received attention. The finished car was sprayed in Midnight Blue to match the family's original Wolseley and this automatic 1300 makes a great way to travel.



### 1965 Volvo 122S

JUNE

This Amazon's first owner lived on the Isle of Lewis, a 300-mile journey from the nearest Volvo dealer and it was in Scotland where owner Pat Drummy bought the car back in 1970. It gave faithful service for the next 180,000-odd miles until Pat took it off the road for a tidy-up... and then pressure of work saw the car sidelined until 2013 when Amazon Cars were called in to recommission it mechanically. The bodywork was then entrusted to DLF Classic Cars where a nut-and-bolt rebuild brought it back to its former glory. "It had been in the family so long, I considered the old girl deserved the best," says Pat.



### 1974 Skoda 110

AUGUST

We've never featured a Skoda restoration before and it may be a few years before we see another but this 110 was a knee-jerk reaction by owner Matt Curtis against the VW concours scene. The car was bought online unseen from Slovakia but when it arrived the poor paintwork concealed a remarkably sound body needing work to only the sills and a few other areas. The engine was rebuilt at home and many parts for the Skoda were sourced from Germany, while three of the four doors were replaced with used panels. When the car went back on the road it was issued with an age-related UK plate and certainly makes a change from the usual British classics.





### 1974 MG Midget

AUGUST

Rich Weaver was inspired to rebuild a Midget after fond memories of the Black Tulip example his father had owned during the '70s and after a lengthy hunt chanced upon this car. It wasn't until later that he discovered it was in fact the same car he remembered from his childhood.

Off the road since 1981, it was stripped down at home where Rich and his dad discovered only one small spot of rust which was duly fixed before the car was sent off to paint – in the same rare Black Tulip of course. Rich reassembled the car with impressive attention to detail using a replacement correct engine, a new old stock Ochre interior and a superb finishing touch: a rummage in the attic unearthed the Mountney steering wheel his dad fitted to the car all those years ago.



### 1970 Cortina Savage

OCTOBER

Ford didn't offer a V6 engine in the MkII Cortina – that would have to wait until the MkIV – but tuner Jeff Uren did good business converting the cars to Essex 3-litre power under the name Savage. Philip Lewis had been on the hunt for a Savage for a while when he found this example as a part-finished restoration. The previous owner had done all the bodywork and most of the front end sported new panels but the paintwork needed sorting out. The softened lacquer was gently removed and the car retrimmed, while the engine was rebuilt to standard Ford spec. Philip finished the car with all the right details and the result looks superb.



### 1953 Jaguar XK120

NOVEMBER

The XK120 is firmly in the blue chip category of classic cars with prices fast following the E-Type upwards. That's probably why we don't feature many restored examples in CM, but this one is an exception, having been restored by its owner's own hands rather than a 'chequebook restoration'.

Steve Mulvaney acquired the car as a project with a rusty body, damaged chassis and rodent-nibbled interior but happily set about the restoration which would keep him busy for the next 15 years. A jig was made up to hold the body straight while the welding was performed and much fabrication was involved in creating the panels to restore the body. Luckily the engine proved to be serviceable and with the work finally done and the car re-registered Steve had built himself a Jaguar worth upwards of £70,000.





## 1986 Cavalier convertible

DECEMBER

"A Cavalier? In a classic car mag?" wasn't an uncommon reaction to this feature but in reality the convertible version of the MkII is not only rare but a partly hand-built car too, converted to order by a German coachbuilder on behalf of Vauxhall/Opel.

The owner of this example, Simon Ough is a confirmed Cavalier enthusiast with a string of previous examples behind him so bringing this one up to scratch wasn't a problem for him. Acquired as a 'good, honest car' the Vauxhall needed bodywork repairs to parking dents and shabby arches and then received a new roof after vandal damage. A few years later, Simon decided to treat it to a more extensive rebuild and the car was stripped and repainted in the superb '80s metallic brown. The injected 1.8-litre engine was found to be down to just 83bhp, so a 2-litre was dropped in and restored its 115bhp. The result is an elegant, four-seater modern classic with the performance to keep up with modern life.



## 1936 Austin Ruby

DECEMBER

There's a real appeal to the diminutive Seven and owner Michael Harcourt admitted to us that this Ruby is one of his favourite cars – high praise when it shares the garage with a V12 XJ-S. Michael bought the car as a 'runner' needing a light restoration but this proved to be more than slightly misleading: work involved rebuilding one door, repainting the whole car and rebuilding the engine. Oh, and getting the rust out of the fuel tank by filling it with aquarium gravel and strapping it inside a cement mixer...

The completed car has served Michael and wife Gil well since it went back on the road, having taken them on several foreign trips as well as innumerable outings with the Austin Seven club crowd. Chatting with Michael and Gil their affection for 'Blossom' shines through and it made us all want a Seven in our own garage.



## 1968 Morris Traveller

It's either our most favourite or least favourite of the year depending on whether you're the finance director or the editorial staff but finally getting our own Morris restoration on to the road in early summer was a real high point.

The car had been started as a 'live restoration' at the NEC show in 2013 but once work began it had proved to be a far bigger task than anyone had expected. It wasn't helped by CM changing publishers part-way through but once we'd taken the painted shell and a van full of bits to Charles Ware's Morris Minor Centre we could finally see the light at the end of the tunnel.

The completed car came back to us in May and we pressed it into service immediately with trips all over the country culminating in a trouble-free run to Land's End. It's always been a firm favourite in the Kelsey offices and we were sorry to hand over the keys to its new owner at the NEC show this year.







TVR famously offered blue chip performance without the exotic engineering ... or the exotic price tag. We untangle the confusing range WORDS PAUL WAGER

**T**VR's real heyday was the 1990s when under Peter Wheeler's control, the firm took its tried-and-tested recipe of tubular chassis and fibreglass bodywork into the mainstream. Before then it had been something of a niche market, enthusiasm mainly concentrated among hardcore sports car fans, but modern styling and very modern performance enabled it to compete with some much more

complex products. That the Blackpool firm managed to provide Porsche-rivalling performance with nothing more than the old pushrod Rover V8 was a masterstroke, giving the cars a rumbling soundtrack which could be heard long before a bright yellow Griffith hammered into view.

Despite its performance, the TVR-modified Rover engines were outwardly largely identical to those found under the front of

a Range Rover or Discovery which resulted in ease of servicing and more importantly, reliability. The race-bred chassis and suspension was another key part of the mix and the result was a credible performance car which managed to achieve what Lotus had forever been reaching for with its high-tech approach.

Of course TVR struggled after the departure of Wheeler and ultimately sank from view, although regular readers will be

well aware that a new TVR-badged design is currently in the works, designed by none other than Gordon Murray. Sadly, when TVR took the bold step of designing its own engines, the practicality started to suffer and today it's the early Ford-powered cars and the later Rover-engined models which capture the imagination of the classic enthusiast today. Here's what you need to know about classic TVRs.

## OUR CHOICE

### TVR Chimaera

- £15,000-£27,000
- Engine: 4546cc Rover V8
- Max power: 285 bhp
- Max torque: 300 lbf.ft
- Max speed: 160 mph
- 0-60 mph: 4.7secs

Later TVRs gained something of an unfair reputation for reliability but that really relates to the models running TVR's own engines. The Chimaera relied on the well-proven Rover V8 and as such the running gear holds no surprises. You'll even find that Land Rover specialists can look

after regular servicing work for you, although you might not want the apprentice doing the road test afterwards... The Chimaera also uses plenty of parts from volume makers which makes life easier and the TVR Car Club can provide all the cross-reference information you might need. Over 5000 Chimaeras were produced which makes them the most popular TVR model by a long way.

All that adds up to a surprisingly sensible modern classic... although when you fire it up it sounds anything but sensible and has the performance to square up to anything from Stuttgart or Modena.

## LOOK OUT FOR...

- Chassis rot, especially under the original protective coating. Check the front outriggers, seatbelt mounting areas and rear suspension.
- Electrics can be temperamental but that's common with fibreglass cars. Just check the earths carefully. There are no electronics in these cars.
- Refurbishing tatty fibreglass bodywork is a specialist skill and can get more expensive than steel-body paintwork.
- Accident damage is an ever-present worry: lots of these cars have been off the road more than once...

## OR MAYBE...

### TVR S £5000-£15,000

The S was launched in 1986 as the 280S and was a more affordable car to sit below the Tasmin-derived V8 models. Using an update of the M-Series body style and a simpler chassis than the 350i, it was powered by the

injected Ford Cologne in 2.8 and later 2.9 flavours. Some 2600 were built in total, alongside less than 50 V8-powered S's. The V6-powered car is still good for 0-60 mph in 6.8 seconds and a top speed of 140 mph though, so if you can find one they're something of a hidden gem.





## Grantura

1958-1967



Fibreglass body on a tubular chassis, using a mix of Triumph and VW suspension and BMC rear axle. Power came from B-Series or Coventry Climax engines and the Grantura was also available in kit form. Produced in MkI, MkII, MkIIa and MkIII forms.

## Griffith

1964-1967



The Griffith was a US-developed Ford V8-powered version of the Grantura, created and sold in the USA as the Griffith Series 200 and in the UK as the TVR Griffith 200. The name was taken from Jack Griffith, the racer who came up with the idea of fitting a Ford V8 to the MkIII Grantura chassis. An optional 289ci engine offered 270 bhp and the car became the Griffith 400 in 1964 with detail improvements.

## Tuscan

1967-1970



A low-volume model, the Tuscan was intended to replace the Griffith and offered Ford V6 or V8 power but was based on the newer Vixen. Less than 100 examples were built.

## Vixen

1967-1973



Again featuring the tried and tested recipe of a fibreglass body on a tubular chassis, the Vixen was powered by a Ford Crossflow engine and replaced the Grantura as TVR's main model line. The car continued the tradition of independent wishbone suspension all round and offered an extrovert alternative to the MGB and Elan. From 1968 the Vixen became the S2 which used the longer chassis developed for the V8-powered Tuscan and the S3 received detail changes. The S4 arrived in 1972 and the last few were built on a revised chassis developed for the forthcoming M-Series.

## M-Series

1972-1979



Once again, a fibreglass body on tubular chassis with Ford 1600 Crossflow or Triumph 2.5 straight-six power, badged accordingly as 1600M and 2500M. The TVR chassis was redesigned to use a central backbone with outriggers to support the bodywork and the basic design would serve the company for many years.

Suspension remained by double wishbones all round and the styling was an extensive facelift of the Vixen with the same doors and Ford Consul windscreen.

In 1972 the Ford Essex V6 engine was added to the range as the 3000M, with the Taimar hardtop coupe launched in 1976. In 1975 a turbocharged 3000M developed by Broadspeed was unveiled and offered 0-60 mph in 5.7 seconds with a top speed of 140 mph, recalling the pace of the earlier V8-powered cars.



## Tasmin/280i

1980-1987

Styled by Oliver Winterbottom of Lotus fame, the Tasmin revealed a bold new design direction for TVR, built on a lengthened version of the M-Series design with many Ford-sourced components also in the mix. Following the launch of the V8-powered car badged 350i, the Tasmin name was dropped and the car received the 280i tag.

## 350i

1983-1989



A Rover V8-powered development of the Tasmin design, built in response to Peter Wheeler's demands for more power. The car would later marketed as the 3.9-litre 390SE and the 4.2-litre 420SEC plus the composite-bodied 420SEAC. These were the models which really set TVR on the path to the hairy-chested performance image it would enjoy into the '90s.





## 280S/S/S2



A cheaper car to sit below the V8 models, the S was essentially an update of the M-Series recipe with similar classic styling and a Ford V6 powerplant. It retained the tubular chassis and wishbone suspension of the more expensive TVRs though and was a credible performance car in its own right – especially the rare V8S as shown here.

## Griffith

1991-2002



Featuring an all-new body style in fibreglass, the Griffith had more of a production car look to it with a high-quality finish. Sitting on the familiar tubular chassis, it stuck with the wishbone suspension and employed more powerful developments of the Rover engine ranging from 4-litre 240 bhp to 4.3, 4.5 and 5-litre 345 bhp.

## Chimaera

1992-2003



Mechanically very similar to the Griffith, the Chimaera used the same chassis and engines but ran softer suspension settings and was marketed as a more mainstream, less uncompromising car for everyday use. The body also offered more interior space.

## Tuscan Speed Six

1999-2006

Once more a fibreglass body on a tubular chassis, but this time the Rover engine had gone, replaced by TVR's own design of straight-six engine ranging from a 3.6-litre good for 350 bhp to a 4.2-litre, 440 bhp creation.



## Tamora

2002-2006



A Griffith/Chimaera replacement, the Tamora was powered by a 3.6-litre version of the Speed Six engine which produced 350 bhp and was subsequently joined by the T350 coupe.

## Cerbera

1996-2003



Similar to the Chimaera in appearance, the Cerbera was the first hardtop TVR of the Peter Wheeler era and was also powered by TVR's own straight-six engine and then its own V8, ranging from a 360 bhp 4.2-litre to 4.4 litres and 440 bhp.

## Sagaris

2004-2006



The swansong for TVR, the Sagaris used the TVR straight-six in its 4-litre version, rated at 380 bhp and was quoted as having a top speed of a 185 mph, the 1078kg creation scorching to 60 mph in a superbike-rivalling 3.7 seconds. Sadly, the Sagaris would prove to be temporarily the last of a long line of TVRs to use that fibreglass body/wishbone suspension/tubular chassis recipe. **CM**



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# GROWN UP SCALEXTRIC

The technically advanced Imp went head to head with the mighty Mini – and sadly lost.

WORDS IAIN WAKEFIELD



**W**hen the covers finally came off the Hillman Imp, this smart-looking little two-door car received a lot of favourable comments and period advertising material produced by the Rootes Group described the new model as 'the grown up answer to Scalextric'. This jokey headline made a refreshing change as prior to the Imp's launch in May 1963 a lot of cars produced by the Rootes Group had been described as stylish but disappointing and boring to drive.

These negative remarks certainly couldn't be levelled at the little rear-engined Imp and despite the car's unveiling being spoilt by a leading motoring title letting the cat out of the bag a few months before the official launch, the press were largely favourable about the highly practical new small Hillman.

Rootes had started to develop a small car in the mid-'Fifties and set up a team of innovative designers lead by Michael Parks and Tim Fry with a brief to

design a car able to accommodate two adults and two children, was fun to drive and have a top speed of 60mph. A Continental-style rear-engined format was preferred and the first result the team produced was an aerodynamic micro car that became known as the Slug.

Lord Rootes was not impressed with the Slug's design; in fact he hated it and didn't want to see the company's name associated with what essentially looked like a bubble car. So it was back to the drawing board to produce a bigger design, code named Project Apex under the direction of Technical Director Peter Ware who would see the revised project to maturity.

At the time Rootes didn't have suitable small engine for its new project, so it turned its attention to a water-cooled, all-aluminium four-cylinder unit being produced by nearby Coventry Climax to power fire pumps. This advanced overhead cam engine had also gone racing and when canted over by 45 degrees, fitted the bill perfectly. As the new

engine would be mated to a hardwearing transaxle, Rootes hired Adrian West to design the unit as he'd had experience with similar transmissions at Fiat, Simca and Renault.

The launch of the front-wheel drive Mini in 1959 had turned the world of small cars upside down but Rootes were so far down the line with project Apex, the company couldn't scrap its plans for a rear-engined small car and start again. To make the configuration work, Apex not only had to look good, it required a first-class and no-expense-spared suspension set up to make it ride and handle well too.

With Apex approaching the final development stages, Bob Saward added a touch of transatlantic styling and what had previously been considered a bland looking three-box prototype was transformed into an attractive looking, technically advanced small car that would see the light of day in 1963 as the Hillman Imp.

Despite a host of early

teething problems through a lack of development, the Imp was competitively priced and sold reasonably well. The Imp was a radically different small car and to enhance the car's appeal the company introduced a string of upmarket badge-engineered versions and in 1965 unveiled the improved MkII Imp along with the now highly desirable limited edition 998cc powered Rallye Imp. Production of this unique little car continued through the stormy days of the takeover of Rootes Group by Chrysler and production managed to soldier on until the final Hillman and Sunbeam badged Imps rolled off the assembly lines in 1976.

## BODY

Unfortunately, all Imp monocoques rust badly and are not easy to restore. Rust proofing applied at the factory was a hit-and-miss affair so the first place to check is underneath, especially around the crossmember mountings. Early cars had drain holes in the floors and were built of better quality





The Singer Chamois Coupé shared its fastback body with the Hillman Californian.



steel, so these cars tend to survive longer than later ones. While under the car, pay particular attention to the condition of the suspension mountings and inner sills, as repairs here can be expensive.

The engine lid can rot out around the lower corners and the rear valance also attracts the dreaded tin worm. If the battery has been filled carelessly, the tray will rust out. Other places where corrosion can get a hold are at the base of the doors, under the front screen rubber and at the bottom of the A-pillars.

## ENGINE

Overheating is the Imp's main enemy, as a boil-up will seriously warp the cylinder head on this all-alloy overhead cam engine (valve clearances are adjusted with shims). Some engines can overheat so badly the block warps, rendering the whole unit scrap. It's essential the cooling system is checked regularly and the duct to the radiator is kept clear of debris. If possible, check

the concentration of the coolant; it should be a 30/70 per cent mixture of water and anti-freeze.

The Imp's water pump can suffer from worn bearings and may eventually disintegrate. This issue generally only affected early cars, but it's worth checking the pump has been replaced recently before parting with any cash. It's also important that the fan belt isn't too tight and the heater works correctly.

All Imp engines leak a small amount of oil but a major leak could be due to a stripped or damaged thread as with all aluminium engines, it's essential to ensure any bolts are tightened to the correct torque. The Imp's 875cc engine is a hardwearing unit and looked after properly should be reasonably trouble free.

## TRANSMISSION

The Imp's hardwearing transaxle featured baulk-ring synchromesh on all four-forward gears and is definitely one of the Imp's strong points. Providing all the maintenance

schedules have been adhered to, this assembly rarely gives any major problems. Despite the distance from the gear lever to the rear-mounted box, the process of swapping ratios should be slick and positive. However, a clunky change may be down to worn bushes at the base of the gearstick. Replacement nylon bushes only cost a few quid and are easy to fit. If the clutch pedal feels heavy, suspect a faulty hydraulic slave cylinder and any leaks from the transaxle are usually down to worn driveshaft seals. Rubber Rotaflex drive shaft joints can split, so check these are intact before a test drive. Don't be too put off by worn or damaged joints as these tend to be in good supply and are reasonably easy to fit.

## INTERIOR

It can be difficult to locate replacement trim, so make sure the interior is as complete as possible and ensure the correct parts are fitted to suit the

## IMP VARIANTS

### CALIFORNIAN

Introduced in 1967, the Californian shared its stylish coupé body with the Singer Chamois Coupé and remained in production for three years. Although it looked fast, the Californian utilised standard Imp running gear and the opening rear window of the saloon was sacrificed for the attractive sloping rear window.

### SINGER CHAMOIS

Based on the Imp saloon, the Singer Chamois was an upmarket version introduced in 1964 and proved very popular. A polished wood-effect dash and larger, more comfortable seats maintained the marque's traditional qualities and a stylish coupé version appeared in 1967.

### SINGER IMP SPORT

To further enhance the appeal of the Imp, Rootes introduced a sports version that was also marketed as a Sunbeam. The car's 875cc engine was fitted with twin Zenith/Stromberg 125D carburettors and an oil-cooler helped keep the temperature under control on this hot Imp.

### SUNBEAM STILETTO

Added to the Imp range in 1967, the Stiletto combined the sleek lines of the Californian and the Sport's twin-carburettor fuelled engine. It's now considered the most desirable of the range and can be identified by its unique dashboard layout, quad headlamp set up and standard vinyl roof covering.

### HUSKY ESTATE

This was the estate version of the Imp and its high roofline was four inches higher than the saloons. Production started in 1967 and the Husky's interior was the same as on the Imp deluxe. Sliding side windows make the interior bright and airy but can be source of leaks. Husky production ended in 1970.

### RALLYE IMP

A limited edition offered to enthusiast owners who required a basis for further modification and competition use. A slightly tuned 998cc powered the Rallye, which was fitted with sports suspension and was also sold as a Singer.

### COMMER IMP VAN

With a load area tall enough to carry full sized milk churns, the Commer Imp first appeared in 1965 and continued in production until the middle of 1970. The rear door was hinged at the top and the van's high floor made it easy to load. Despite over 18,000 being built, survivors are rare and good examples can be expensive.





# SURVIVOR'S GUIDE

## Hillman Imp



Although the Hillman Californian may have looked fast, it utilised standard Imp running gear.



Moulded seats on some Imps may be difficult to source but underbonnet repairs are a doddle.



### TECH SPEC

#### HILLMAN IMP

ENGINE:	875cc
POWER	(bhp/rpm) 39/5000
TORQUE	(lb/ft) 52/2800
TOP SPEED	83 mph
0-60 MPH	23.7 secs
CONSUMPTION	38.1mpg
GEARBOX	4 spd-man
LENGTH	358.1cm
WIDTH	152.9cm
WEIGHT	711.9kg

version of Imp you're looking at. Seat covers can get tatty and be warned that some late models have moulded seats and can be very difficult to repair. While inspecting the furniture, don't forget to check the security of the seat frame mountings on the crossmember as these can sometimes work loose.

As the dash layout changed on Series 2 Imps, dials can be hard to find. While inspecting the interior, don't forget to check if the heater works correctly. The pipes to the unit run from the engine bay and there are a couple of tight angles en route that can pinch the tubing and either starve the heater of hot water or even chafe through a pipe and cause a catastrophic loss of coolant.

### SUSPENSION

The Imp was fitted with a relatively sophisticated independent suspension comprising semi-trailing arms at the rear and struts at the front. Although this costly set up provided class leading handling for a small rear-engined car, early Imps tended to suffer from too much understeer. This unsettling trait was cured on later Imps by lowering the front pivots, which altered the camber angle.

When buying an Imp or one of its several variants (see separate panel), it's very important to check the front kingpins and The Imp Club ([www.theimpclub.co.uk](http://www.theimpclub.co.uk)) can supply a kit to overhaul these items on early cars. The rack and pinion steering should feel light but if the rack is worn, The

Imp Club can supply an overhauled unit for around £90. Other items to check are the condition of the front anti-roll bushes.

### VALUES

Imp prices are steadily increasing and more upmarket versions such as the now rare Singer Chamois and Sunbeam Stiletto are getting expensive. Budget on spending around £3500 for a presentable Hillman-badged Imp that's either been recently restored or maintained to a very high standard, and around a thousand pounds less for an example requiring a bit of work to put right.

More luxurious models, especially the Californian fastback and the highly desirable twin-carb equipped Sunbeam Imp Sport are well

worth tracking down but expect to pay a healthy premium for a decent one. A decent Californian or Singer Chamois Coupé will cost upward of £5000, while a sparsely equipped Husky estate will set its new owner back at least £3500 for a decent example.

There are a few affordable Imp projects for sale in various states of decay and prices for a complete car requiring restoration will start at around £700-£800. Repair panels are available to sort out a rotten monocoque and Imp specialist Malcolm Anderson ([www.malcolmanderson.co.uk](http://www.malcolmanderson.co.uk)) are able to supply a good range, including chassis legs, replacement suspension mounts and crossmember repair sections. **GM**



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# COMPACT MUSCLE

Having created its reputation in compact sporting saloons with the Mk1 and Mk2, Jaguar then walked away from the market in 1968 until 2000 when the modern S-Type started the revolution which culminated in the new XE.

WORDS PAUL WAGER

**T**he year 2015 saw the Jaguar Mk1 celebrate its 60th birthday and we ran through the history of what was Jaguar's first unitary construction car back in our March issue.

There's no arguing with the sentiment that the Mk1 was a truly significant car for Jaguar, even though the Jaguar 3.4 – as it was known at the time – didn't itself last in production very long. Launched in 1955, it was replaced in 1959 by the Mk2, although this was effectively merely a heavily facelifted Mk1, the company using its experience with the newfangled unitary construction methods to refine the design with slimmer pillars affording a bigger glass area, plus a wider track for improved handling.

The Mk2's basic design would be produced until the launch of the XJ saloon in 1968, along the

way spawning the S-Type, which was in simple terms designed to answer criticisms of the ageing Mk2 design's live rear axle by grafting on the independent rear end developed for the E-type and big MkX. A fine idea in principle and a cost-effective way to update the Mk1 design, this requires a redesign of the rear bodywork in order to accept the stresses of the independent rear suspension and the resulting restyle wasn't to everybody's taste. It was however a more refined package than the Mk2 had ever been and was praised by contemporary road testers for its ride and handling.

A more complete solution was achieved in 1966 when the S-Type was restyled to gain a MkX-style front end and the 4.2-litre XK engine was dropped in to create the short-lived 420. Something of a test bed for the forthcoming XJ, the 420 was the

ultimate evolution of the model range which had begun with that first Mk1.

Meanwhile, the Mk2 had remained in production to add another element to Jaguar's increasingly chaotic product line and had been renamed 240 and 340 for the 1967 model year.

In 1968 though, the new XJ was launched and at that point it was all over for the smaller Jaguar models: the 420 production had ceased shortly before the launch of the XJ, while the Mk2 was axed the following year and the big MkX/420G disappeared in 1970, the new car having eaten into its sales.

Almost incredibly the firm didn't replace its smaller saloon for some 32 years, relying from 1975 until 2000 on a two-model range of XJ and XJS – or three models, if you counted the handful of DS420 limousines built every year.

It's incredible that the firm survived this long on just a single upmarket saloon model which during the late '70s and early '80s enjoyed a less-than-perfect reputation for quality, together with an expensive V12 coupé which had sunk to such poor sales volumes that cancelling the car entirely had been seriously considered.

The arrival of Sir John Egan saw the firm's fortunes dramatically improved with a significant uplift in quality and eventually the launch of the XJ40 together with improvements to the XJS range but it still wasn't enough to secure Jaguar's future as an independent player.

Ford Motor Company of course entered the picture in 1989 and although initial efforts concentrated on improving the production facilities and product quality, in 1998 it was decided that Jaguar needed a wider





**Jaguar was a major player in the 1960's compact executive saloon market with the Mk2, 420 and the S-Type all on sale together.**

range. For which, read higher production volume.

The solution to getting a car into production without crippling development costs was to adapt a platform from elsewhere in the Ford empire, in this case jointly developing the 'DEW98' platform with the Lincoln LS. Jaguar purists may have panicked but in reality this was no bad thing: the result was a thoroughly modern state-of-the-art platform and was designed from the outset for rear-drive.

It's often suggested that Jaguar was simply handed the Lincoln platform and told to 'add Jaguarness' but the reality is that the project was a joint venture from the start, the US engineers just as keen to access the British firm's ride and handling know-how. The programme took three years in total, with teams from each company crossing the

Atlantic to work with their counterparts.

Quoted in the trade journal *Design News* back in 1999, Jaguar's chief programme engineer for the car explained that the idea was to develop big-ticket items like fuel systems, transmissions, climate control, axles and similar in common to achieve cost savings, then imbue each car with different ride and handling characteristics. Key areas developed in common were the crash safety and suspension geometry, while Ford's advanced supplier logistics and quality management systems were also integrated into the development to ensure a high-quality product.

The S-Type was to be produced not in the traditional Browns Lane location but in the Castle Bromwich plant in Birmingham – a former Spitfire fighter assembly site and then BL

facility which had been taken over by Jaguar during the Egan era.

This was something which allowed quality to be stepped up: with a brand new line installed to produce the car, Ford's manufacturing expertise could be introduced and the result was impressive.

Drive even a high-mileage S-Type today and you'll be surprised by the lack of squeaks and rattles, while it's a fair bet that all the dashboard switches and buttons still do exactly what they're supposed to do.

The result was technically a superb car, even if the self-consciously retro styling didn't gel with everyone. The car did achieve its goal of increasing Jaguar volumes and in fact, the platform lived on in modified form under the first generation XF which was as far from retro as it's possible to get.

The Ford theme continued under the bonnet, with the S-Type being the first Jaguar since the '50s not to be offered with the traditional straight-six engine. Instead, there was a V6 which was effectively the Ford Duratec unit found in the Mondeo as well as various Ford, Mercury and Mazda models.

Dubbed AJ-V6 – AJ25 as a 2.5-litre and AJ30 as the 3-litre – the all-alloy engine was modified for Jaguar use with fracture-split con rods, one-piece camshaft and mechanical bucket tappets. The result was a thoroughly modern powerplant which was refined enough to suit the Jaguar badge yet also provided gutsy performance, certainly in 3-litre guise.

Alongside the V6 was the Jaguar's 4-litre AJ-V8 engine which gave the S-Type seriously credible performance which together with the car's tidy







The retro-styled S-Type could be ordered with either a V8 Jaguar or V6 Ford-sourced petrol engine as well as a 2.7-litre diesel.



handling was a match for BMW.

The result was a car which really didn't scream Ford or Lincoln from the driving seat and which felt very much like a 'proper' Jaguar, albeit modernised for the coming new century.

Where the controversy came was in the car's appearance. Styled by Geoff Lawson, it was either a retro pastiche or a neat piece of work cleverly recalling the lines of the Mk2, depending on which opinion you held. It was entirely right for the era though, with makers like VW also hopping on the bandwagon with the new Beetle, while BMW subsidiary Rover launched the retro 75 at the same time.

Road testers of the time praised the car for its road manners and for its high quality and although they remained divided on the car's appearance,

the buying public voted with their cash and the S-Type is credited with lifting Jaguar sales above the crucial 100,000 units.

The V8 was enlarged to 4.2 litres in 2002 and the 400bhp supercharged version of the engine appeared in the searingly fast S-Type R – a worthy rival to BMW's M5 and M3.

The car was facelifted in 2005 with redesigned nose and tail which toned down the retro look, while a diesel engine option was added in the shape of the PSA-derived 2.7-litre V6.

In 2008 the S-Type was replaced by the starkly modern XF, but although the sharp lines of the XF left the retro era firmly behind, the new car was in fact still based on the DEW98 platform, which is some measure of how well regarded the joint Ford-Jaguar development turned out to be.

Flushed with the success of the S-Type, Ford then had the bright idea of increasing Jaguar volume still further, with a model sitting in the segment below and holding the BMW 3-Series firmly in its sights.

This was however to prove a harder development task, since the S-Type's DEW98 platform simply couldn't be adapted to produce a smaller car. All the smaller platforms in the Ford empire used a transverse engine rather than the longitudinal powerplant of the traditional Jaguar layout which pointed to the 'CD132' platform as the final choice.

As urban rumour suggests, this was indeed the platform underpinning the 2002 Ford Mondeo but in reality it was extensively re-engineered by Jaguar.

The dimensions may have been similar but the front suspension was entirely revised, while the rear end essentially used the independent set-up from the Mondeo estate. In the Ford this was used to give the estate a flatter load area but in the S-Type it allowed a rear subframe and differential to be added for rear-wheel drive.

A front-drive Jaguar would have been too much for the market to take, so at launch the X-Type was four-wheel drive only. A separate transfer box used a viscous coupling to send drive to the rear wheels, with the car retaining a rear-biased torque split. Engine options initially included 2.5 and 3-litre versions of the Duratec V6, joined by a smaller 2.1-litre V6 (badged as a 2-litre) in 2002 as a front-drive only offering. Meanwhile, the ➤



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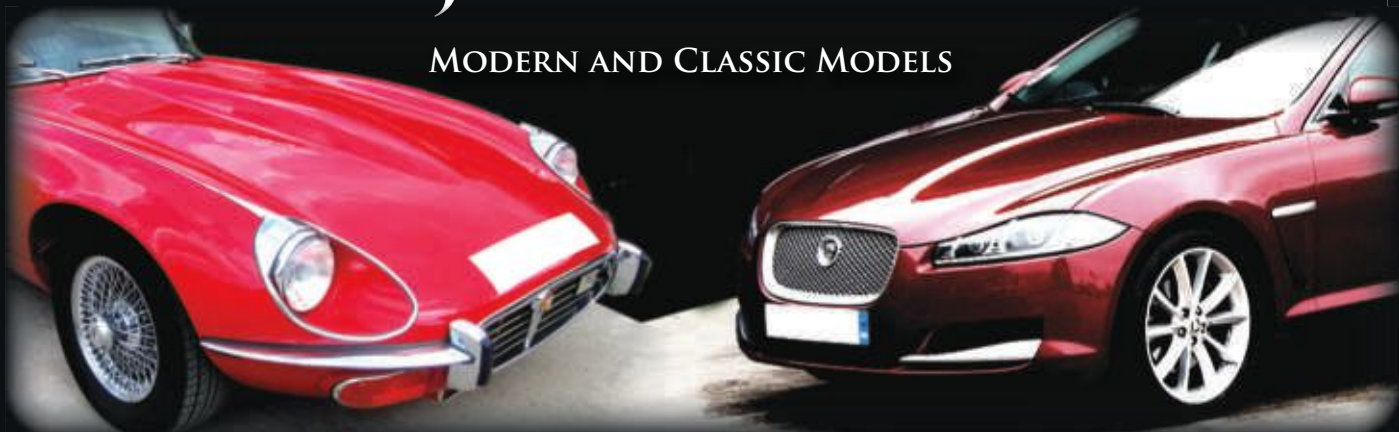
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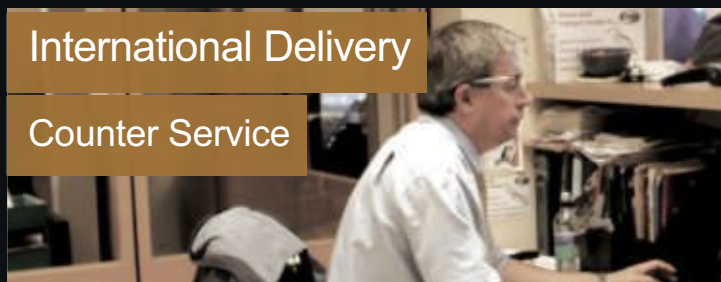
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While the S-Type's DEW98 platform was developed jointly with Lincoln, the X-Type used the existing Mondeo platform.



Converting the Mondeo platform to a 4x4 layout avoided the difficulty of trying to market a front-drive Jaguar.







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## HISTORY Compact Jaguars



Jaguar returned to the compact saloon market in 2015 with the XE and aimed it at the well established BMW 3-Series.



first four-cylinder Jaguar since the days of the SS models appeared in 2003 in the shape of the X-Type diesel. Using the 128 bhp 2-litre unit from the Ford Mondeo TDCi, it was available only in manual front-drive form, while the estate joined the range in 2004. In 2007 the diesel option was upgunned to a 2.2-litre, 152 bhp option which transformed its

performance and with a facelift, the X-Type continued to sell in reasonable numbers.

The sale of Jaguar and land Rover to Tata came along in 2008 and the new owner's decision to position Jaguar as a prestige brand saw the future of the X-Type in doubt. The end was confirmed when the decision to use its production line at Halewood for the Evoque

was announced and the last X-Type was produced in December 2009.

for a second time, Jaguar then left the compact sports saloon market entirely, destined not to return for another six years, with the launch in April 2015 of the XE.

This time round though, the Ford platforms are left thoroughly behind and the XE

employs Jaguar's advanced aluminium structure which also underpins the second-generation XF.

We've had the opportunity to sample the car and can report that its blend of modern style and state-of-the-art aluminium construction does recall the market position the Mk1 enjoyed back in 1955. Just don't mention the Mondeo. **CM**





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# Slow puncture or blow out?

Could the end of the classic car price bubble be just around the corner? We ask a leading insurance specialist for their opinion on the current state of the market.

Mark (left) and Chris Wilkinson, the father and son team behind Heritage Classic Car Insurance recently celebrated the company's 50th anniversary and are seen here with Chris's Jaguar XK150.



Anyone who's been to a classic car auction recently will probably have left the sales room in a state of shock after seeing top end models such as E-Types, Ferraris and Porsches going under the hammer for hundreds of thousands, or in some cases millions of pounds, euros or dollars. Looking at past trends, today's high price bubble could burst with disastrous results for investors and enthusiasts alike. So to find out more about the current state of the classic car market we asked Mark Wilkinson, managing partner at Heritage Insurance ([www.heritagecarinsurance.co.uk](http://www.heritagecarinsurance.co.uk)),

one of the UK's longest established classic car insurance specialists to reveal his thoughts.

Commenting on today's high prices, Mark told us that to better understand what many people are referring to as the classic car bubble and when it might end, it's important to look at the causes of increasing car values. 2011 can broadly be identified as the beginning of the current classic car boom, with the global recession seeing car values at an all-time low, whilst returning economic confidence and record low interest rates made classic cars a viable investment for speculators. Guided by dealers

and auction houses, price increase for some classics have gone stratospheric, with one Lamborghini Miura in particular being a perfect example – bought by the dealer for £600k, first advertised for £895k, raised two months later to £995k and again to £1.25m, all within the space of six months.

Mark reckons there are three top factors influencing a car's desirability. First is quality and this is all about the perceived value of the brand or particular model, is it high end and prestigious? Do people crave and covet vehicles and associate them with success? Second is quantity. How many examples

are actually left? The fewer survivors the more exclusive the experience and the third is hype, which is all about the razzmatazz and excitement surrounding a car or a model. Did the car win races and rallies? Did it have a celebrity owner? Is the car recognised as an iconic model, one that broke new ground and set new trends?

Mark explained that the perfect storm for rising vehicle values is one that strongly incorporates quality, scarcity and hype. At the highest end these would include Ferraris (250 GT, 275 GTB), Mercedes (540K roadster, W196), Alfa Romeo (8C), Bentley (Blower, Six Tourer),



Bugatti (Royale Kellner, 57SC), all of which have made headlines in the classic press with phenomenal price rises and records set.

The massive values of these vehicles, which can reach upwards of £1 million is way beyond what most of us can ever imagine affording. Mark doesn't believe these vehicles are a significant driving factor behind the current classic price rise, but he thinks it's part of the trickledown effect. Purchasing these and other marques offer the opportunity for some to join the motoring elite. With steep rises at the highest end, similar increases have been seen in traditionally more accessible marques, with the Ferrari Daytona, F40, Dino, the Porsche 356, GT2, GT3, RS, Aston Martin DB4 and DB5 all increasing into the hundreds of thousands of pounds over the last four years and vehicles such as the Series 1 Jaguar E-Type tripling in value over the same period. This is where investor speculation resides, with these highly desirable, but 'relatively' affordable vehicles. Mark went on to explain how there is a new generation of 40-something year old car

enthusiasts who are snapping up iconic cars from the '80s and '90s. This cash-rich segment of the population is seeking alternative investments for their disposable income and have a desire to own classic cars, such as the Peugeot 205 GTI, Ford Cosworth, RS Escort, BMW M3 and CSL they remember from their youth.

With these latest buying trends coupled with the relaxation of the pension regulations and a lack of capital gains tax on cars, it's tempting to think that current growth will continue. However, there are signs of an imminent downturn. Expected increases in interest rates will make non-yielding assets, such as classic cars less attractive to investors. Volatility in global markets could lead to falling values. Closer to home, recent large-scale sales by high profile collectors could signal a likely downturn. While a scandal, similar to the Volkswagen emissions crisis involving a supposedly old vehicle sold as an original, which turned out to be a high quality replica, could see prices for certain vehicles plummet.

Mark thinks the following situations are likely reasons why

the classic car bubble might burst. Rising interest rates are likely to be a catalyst here; firstly as it will make non yielding assets less attractive and secondly when assets bought on debt become too expensive to service they will be forced into auction and potentially have a big impact. Other factors will be when comparable commodities and assets becoming more attractive; political and economic change both national and global or as a result of what's called the 'Black Swan Event' – Oh, I didn't see that one coming. No, none of us did!

Having said that there are a number of trends, which would indicate a slowing down rather than the dramatic change seen in the classic car crash of the '80s and '90s. Firstly, the classic car bubble from those years was largely fuelled by wealthy Arab and American speculators purchasing vehicles on debt. Current buyers are tending to purchase with their own savings, whilst the supply of good cars is increasingly limited. The world is finally realising that owning a Jensen Interceptor represents a unique piece of motoring history. Additionally, nostalgia is a powerful thing and the world

market has never been a bigger place. New markets in the Middle East, India, China and South America have now opened up and enthusiasts in these countries are starting to buy those vehicles, which are seen as desirable and make owners feel special and different.

Finally, there is also a very strong classic racing scene, numerous well attended events and shows, well organised clubs and classic tours, all of which open the door to a lifestyle choice that attracts a lot of people. This isn't going to disappear even if the bubble does burst. In Mark's opinion these are all points that support a plateau, or a slow puncture theory. Overall, if we continue with a stable global economy, Mark says he can see upwards trends continuing but beginning to plateau over the next six to 12 months, with interest rates rises resulting in a puncture effect, as investors look to shift to better performing assets. However, if the global recovery takes a hit, (keep an eye on China, India and Europe) all bets are off, then batten down the hatches and on hang tight for the long run!" **CM**

## TOP CLASSIC CAR BUYING TIPS

### ■ Always buy on condition.

There is one piece of important advice that will mean different things to different people. If you are mechanically minded, you may actually be looking for a classic to fix up, maybe something to tackle as a first project with your son or daughter. However, if it's your initial foray into classic car ownership and you are not mechanically minded, then look to spend a bit more and get a car that has been meticulously looked after and maintained, ideally with a big file of photos and receipts to show what has been done over the years. Surprisingly, you can often find vehicles that have had more spent on their restoration than they're actually worth. These are definitely the best cars to look out for.

### ■ Join the relevant car club

You don't have to be an owner to join a car club. Here you will find masses of information and like-minded people who are more than willing to share their stories of car ownership. So you will get a very clear picture of what owning that type of car will be like. You may even get one of them to let you have a go in theirs before your buy!

### ■ Buy a car you've always wanted and works for you

It's definitely a commitment to own a classic car, so make sure you are really sure about the car you are after and that it suits your lifestyle. If you are married with two kids and a dog, is a two seat TVR really the right car for you?

### ■ Stay within your allocated budget

It's very easy for the heart to rule

the head, so try to stick to whatever limits you have set. You also have to realise that those funds will be stored in that car while you own it. If you suddenly need ready access to funds, it will take time and effort to release them from the car.

### ■ Take into account storage and maintenance

Purchasing the vehicle is only the start. Have you considered where it will be kept over winter and how much it will cost to keep running, insurance requirements, or what needs fixing? It's also worth having a fund available 'just in case'.

All too often the unexpected goes wrong which costs a lot and keeps the car off the road. Classic cars do not take well to being run cheaply. It's also important to understand that the cost to run

and maintain a car will probably negate any increase in value, so view cars as an investment with open eyes.

### ■ Ensure your partner supports your decision

Make sure you are not introducing an expensive third party into your relationship!

### ■ Get to know your local specialist mechanic

You'll probably spend more time there than you would like to, but having a local expert will be a lot cheaper in the long run, plus providing credibility to any work you have had done.

### ■ Most importantly – enjoy your car!

If you like it and enjoy driving it then it's fair to assume that the same qualities will appeal to others when it's time to move on.



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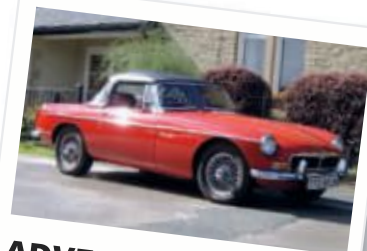
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**1981, £2,000.** With one owner from new in great condition only 23 thousand miles from new in sunburst. Red loads off paper work including the invoice for the car. Old log book MoTs. Tax discs and Ziebert guarantee. Essex. 07572 659706 (HP)

### ESCORT MK2 1600 GHAI



**1976, £6,000.** 4 door, 90% restored, needs middle and back exhaust boxes. Zero rust, fully restored, running gear, brakes under shutz, resprayed (factory) just as it was when it left the factory in 1976. Essex. 07713 691738 (HP)

## HILLMAN

### MINX MK2 ESTATE

**1948, £1,500.** Super rare car, are there any others? Sound car but does need work, lost storage, must go, ring for more details. Oxfordshire. 07584 824079

## HONDA

### PRELUDE 1.8 COUPE

**1985, £150.** Exec 5 speed. Good mechanics, rotten body. Sell or break. Parts fit Accord, Civic, Triumph, Acclaim. Delivery possible. West Midlands. 01922 454782 (RB)

## JAGUAR

### MK 2



**1963, £4,995.** 3.4 manual with o/d. Fully restored body shell. New front and rear suspension. Just needs final shaping and a re spray. Engine turns by hand. Most components present. Chessington. 07931 360396

## LANCIA

### BETA COUPE 1979 1.3

**£350 ono.** Twin cam-for restoration. S.yorkshire. 01302 719464 (SN)

## LAND ROVER

### SERIES 3

**1981, £3,500.** LWB, truck cab. Diesel. 12 months MoT. FWH, new tyres, new shockers, wax oiled. Good starter, good runner, good body. Blackpool. Lancashire. 01253 723863 or 07859 092740 (RB)

## LEA-FRANCIS

### LEA-FRANCIS



**1953, £POA.** Restored by me approx 40 years ago and could now benefit from another re-paint. Original leather and door cards. All in nice condition. Good chrome, recent new carpets and battery. Somerset. 01761 470607 (PB)

## MECMEDES-BENZ

### W123 300D ESTATE



**1984, £3,500.** Light grey. 12 months MoT. Good engine, manual 4 speed transmission. Blue cloth interior. Much of suspension and brakes are newly replaced. Clean body and underside. Economical, good history, third owner. Dorset. 01963 210579 (RB)

## MG

### MGB



**1978, £3,700.** MoT MaCMh 2016. In black. Never been welded. Good runner, good tyres. Red upholstery with black piping. Wood effect dash. Reg. no. MGB 56S included. Central Scotland. Lanarkshire. 01555 840524 (evenings) (RB)

### MGB GT



**1968, £8,500 ono.** Beautiful example for year. Taxed and tested. Paperwork for all new parts, i.e. door panels, carpets, too many to list. Unfortunately ill health foCMes sale. Avon. 0117 937 3598 (RB)

## MORRIS

### 1100



**1966, £2,550 ovno.** Photographic details of recent restoration. MoT August 2016. Very reliable. Good investment, better than money in bank. Any trial. West Norfolk. Norfolk. 01328 701479 / 07767 708933 (RB)

### MINOR 1000



**1962, £3,100.** Extensive restoration in 2003, costing £2,500. Numerous extras. Electronic ignition, fuel pump, heated rear window, halogen headlights, anti-roll bar, variable speed wipers, hazard warning lights, 12 months MoT. No advisories. Conwy Borough. 01492 549121 (RB)



**MINOR TRAVELLER**

**1971, £4,950.** All panels straight, no rust, original interior, superb runner, starts on the button, would like Stag or TR6. Somerset. 07876 202123

**OXFORD ESTATE**

**1958, £5,000.** Brakes overhauled, good oil pressure, tow bar, very original rare estate, MoT tax exempt, reluctant sale, ready to use, cheap motoring. Oxfordshire. 01865 874534

**PORSCHE****944**

**1987, £2,995 ovno.** Auto, decent condition, white body, oxblood pinstripe trim, fsh, MoTs, services etc, belts by German specialists done, fantastic 2.5 tourer, will get you anywhere in style and comfort. Essex. 01375 374460

**944 COUPE**

**1984, 110,000 miles, £500.** Complete car, Blue, MoT ran out 21/10/15 Good engine, needs new home for winter. Reg YJ18944. Essex. 01255 556589

**RANGE ROVER****TWO DOOR**

**1979, £10,000 ono.** Two door, blue, owned by same family for 20 years, runner, needs renovating. Essex. 07704 085826 or 01268 270573

**ROLLS-ROYCE****SHADOW II**

**1978, 87,000 miles, £7,950 ono.** Lovely looking. Silver. Large service file. Old MoTs. All handbooks. Gorgeous new woodwork. Lovely wide, white wall tyres. Taxed, insured. Used monthly. Elderly RREC member selling. Lancashire. 0161 620 3323 / 07749 051411 (PB)

**SILVER SHADOW MK1**

**1968, £10,000.** Rare Chippendale made, long MoT, all original body, runs well and ex engine, good oil pressure, been in the USA 36 years, celeb owner, top half needs respray, no text or withheld numbers. Leicestershire. 07757 200330

**ROVER****213**

**1985, 16,000 miles, £2,850.** Keep up appearances with a bouquettype Rover. Full history. Long MoT. Too fast now for ancient owner. Cheshire. 01513 364034

**75 CYCLOPS**

**1950, £7,950 ono.** Body work very good, seats need attention. Runs well. REG LNN 999. Powis. 01497 821400

**SUNBEAM****ALPINE SERIES V GT**

**1967, £3,750 ono.** Convertible, compete car with lots of work already done. Was MoT'd and on read, but now needs substantial welding underneath. Interior currently stripped out and LHS floor cut away. Good Alpines now fetch £10-15k so viable project. Contact for more pics. 07843 239160 (SN)

**TRIUMPH****HERALD 13/60**

**1971, £500 ovno.** Restoration started, welding done and brake pipes, engine stripped - rebuilt, gearbox checked, seats recovered, new headlining and carpets, body in primer needs some assembly and paint, rolls on wheels. West Midlands. 01215 747066

**TR7**

**1978, 85,000 miles, £800.**

Coupe with sun roof. Electronic ignition, Kenlowe fan. Runs and drives. Good interior. Over 35 years old, some renovation needed. Genuine callers only. Norwich. Norfolk. 01362 637952 (RB)

**TR7 CONVERTIBLE**

**1982, 74,192 miles, £2,000.**

2lt, silver, never been welded, recent MoT, new battery. I can't get in it. Drive away. Chassis no SATPADJ7AA406073. Engine no CGH3. Oxfordshire. 07885 836728 or 01865 880032

**VAUXHALL****NOVA GTE**

**1988, £5,000 ono.** 11 months MoT. I have spent thousands on this car, respray souCMing original parts etc. New clutch and cable all new brake and fuel pipes front to back. It is lowered on sports springs and shocks and all the rubber bushes have been replaced with uprated poly bushes. Interior is fully standard dash board is in mint condition no cracks etc. Cleveland. 07863 696961 (HP)

**VOLVO****360 GL**

**1985, 75,162 miles, £200.** 2.0l carb engine, 5 speed gearbox, 5 door, no MoT, drives. West Sussex. 07762 489275

**PARTS FOR SALE****CAPRI MK1**

**1970, £40 pr.** Fibreglass front wings, new old stock, collection only. West Midlands. 07732 627300

**FORD CORTINA MK1 GT DASH**

**£100 + P&P £20.** 1960 Mina grill ends £6 each. Chrome sliding glass lock £5. Door handle pull cable £8 plus postage. Norfolk. 01328 700426

**MGA ROADSTER**

**1958, £290 ono.** Near-side door, off-side door, both good condition. MG Midget door handles £24. Snap-on speed brace £20. Snap-on new breaker bar. Please no texts. Bucks. 07580 862589

**METAL SUN VISOR**

**£190 + £25 for post.** For classic car or van compleat with fitlings in each primer. West Yorkshire. 07792 410094

**TRIUMPH STAG MK2**

**1976, £45.** Starter motor. Bonnet £120. V8 engine. Glass and door s/s frames. New boot lid, new boot carpet, seats front-rear. No texts please. Bucks. 07580 862589

**PARTS WANTED****DOORS**

**1971, Wanted.** Good pair of Triumph Herald convertible doors. Middlesex. 01895 237820 (RB)

**TRIUMPH HERALD**

**1971, Wanted.** Front apron, pair of doors, distributor, wheel nuts. Middlesex. 01895 237820

**CARS WANTED****TRIUMPH 2.5S ESTATE**

**1976, Wanted.** Your price paid, must be in good condition. Staffordshire. 01827 373128 / 07743 701724 (SN)

**MOTOCYCLES & SCOOTERS****BSA BANTAM D3**

**1957, £500.** Barn find, no docs but has dating certificate, some parts missing, has all tinware and speedo, good project, ring for more information. Staffs. 01785 600588



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